**PC Version**

# User's Manual
# for
# Microtek Scanners
# and the
# ScanWizard Scanning Software

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To obtain optimal results from the Microtek scanning software and user's guide, you should be familiar with such Windows concepts as pointing, clicking, dragging, and selecting from menus and dialog boxes. If these things are new to you, refer to your Microsoft Windows User’s Guide. Windows is a trademark of Microsoft Corporation. Adobe Photoshop is a trademark of Adobe Systems, Inc. All other product names are trademarks or registered trademarks of their respective holders.

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# 1 Basic Concepts

This chapter covers basic scanning concepts. If you already have basic scanning knowledge, you may skip this section and go directly to Chapter 2 for hardware installation.The following subjects are covered here:

- What is a scanner
- How scanners work
- Components of effective scanning
- Image types
- Text scanning
- Resolution and scaling
- Dynamic range and color calibration
- Image enhancement
- File formats and storage
- Printing
- Quick tips for best scans

# What is a Scanner

A scanner is a device that captures an image and converts it into a digital form that your computer can display, edit, store, and output. The image may be a photograph, page of text, drawing or illustration, or even a relatively flat, three-dimensional object such as a bolt of fabric.

In practice, this means you can use your scanner to do the following:

- Incorporate artwork or photos into documents
- Scan printed text into your word processor and eliminate retyping
- Scan faxed documents into a database or word processor
- Add images to multimedia productions
- Integrate visuals into presentations to make them communicate more effectively.

With a basic understanding of how scanners work, the types of scanners available, and what they are capable of doing, you can improve the quality and efficiency of your work.

### Types of scanners

Scanners can be classified into two general types:

- Flatbed scanners, which are used to scan photographs or prints. Flatbeds have a glass surface on which the materials to be scanned are placed. An example of a Microtek flatbed is the ScanMaker III.
- Slide scanners, which are used to scan transparent materials such as 35-mm slides. The ScanMaker 35t Plus is an example of a slide scanner.

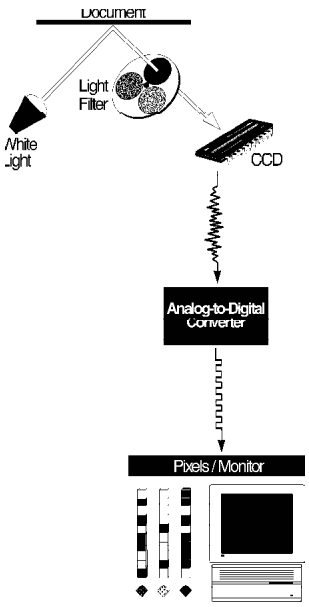
## How scanners work

Scanners capture images by shining light onto the document to be scanned. The light then bounces back and is captured by a strip of light-sensitive cells called a charge-coupled device, or CCD.

Since dark areas on the paper reflect less light and light areas of the paper reflect more light, the CCD is able to detect the amount of light reflecting from each area of the image. The CCD then converts the reflected light waves into digital information, represented by combinations of ones and zeros (called *bits*, for binary digits).

Finally, the scanning software that controls the operation of the scanner reads this incoming data and reconstructs it into a computer image file.

The process above describes how scanners scan an opaque original, such as a photographic print or page of text. The same principle works if you scan a transparency instead of an opaque document, but instead of bouncing back, the light passes through the transparency and is captured by the CCD. Scanning a transparency involves special lighting considerations, so a scanner accessory called a Transparent Media Adapter is specifically used for this purpose.



## Components of effective scanning

The scanner is only one part of the scanning system. In addition to the scanner, you need these other components:

- A SCSI cable to connect your scanner and computer
- Scanning software that controls how the scanner works
- Image-editing software (such as Adobe Photoshop or Microtek ImageStar II) to integrate scanned images into your work; or an OCR software (such as Caere OmniPage Direct) to integrate scanned text into your work
- A suitable monitor to display color and grayscale images
- A device for outputting your work, such as a black and white or color laser printer, dye sublimation printer, imagesetter or other color proofing device.

In addition to the basic components, you can use these scanner accessories to make your scanning even more effective:

- Transparent Media Adapter: For scanning slides, filmstrips, and transparencies.

**Transparent Media Adapter attached to a flatbed scanner**

- Auto Document Feeder: Helps with text scanning by allowing continuous scanning of up to 50 pages of text.

**Auto Document Feeder**

# Image Types

For a computer to represent image information in a digital format, the computer uses units of picture elements, or pixels.

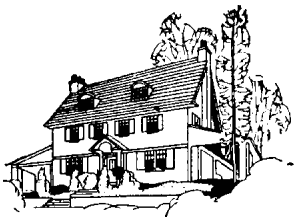
An image file, for instance, is simply a representation of hundreds, thousands, or even millions of pixels arranged in a grid, and computers record the intensity and color of a pixel in 1 or more bits of data. The greater the number of bits, or bit-depth, of an image, the more information it can store. For easy classification, images can be categorized into single-bit, grayscale, or color.

### Single-bit

Single-bit images are the simplest kind, using just one bit of data to record each pixel. Single-bit images come in two types: line art, and halftone.

- Line Art includes anything that is black and white, such as a pencil or ink sketch. Line Art may also include one-color images, such as mechanical blueprints or drawings.

- Halftones are reproductions of images that give the illusion of gray — but only because the black and white dots (or pixels) comprising the image are arranged in such a way as to fool the eye to see gray. This is because when the halftone is printed, dark areas are represented by many dots coming together, while lighter areas are those with fewer dots. An example of halftone images would be the pictures you see in a newspaper.



**Line Art**

**Halftone**

### Grayscale

Grayscale images contain more than just black and white, and include actual shades of gray. In a grayscale image, each pixel or dot has more bits of information encoded in it, allowing more shades to be recorded and shown.

For instance, four bits are needed to reproduce up to 16 levels of gray. Going higher, eight bits can reproduce the 256 levels of gray required to represent most black-and-white photos accurately.

**16 grays**

**256 grays**

### Color

Color images contain the most complex information. To capture color images, scanners use a process based on the RGB (Red, Green, and Blue) color model, where every color is composed of a varying amount of the three colors. In the RGB model, the absence of white light creates black, the complete saturation of light creates white (100% of red, green, and blue), and equal amounts of red, green, and blue create intermediate shades of gray.

Depending on the type of scanner you have, your scanner can record 24 bits or 36 bits for the three RGB channels. This means your scanner can record and reproduce an enormous amount of color information — anywhere from 16.7 million colors for 24-bit scanners, to 68.7 billion colors for 36-bit scanners. The extra amount of information that can be processed by 36-bit scanners translates to more vivid color reproduction, as the scanner is able to accommodate more subtle gradations of color approaching lifelike accuracy.

### Selecting an image type

Depending on the scanner you have, you will be able to scan different types of images according to your needs. You can scan an image and output it in its original form, or you can output it in another form and get some interesting effects.

For instance, you can scan a grayscale photo and output it in its original form as a grayscale photo, or you can output it as a halftone to create a new look. Whatever you do, however, keep in mind that the quality of the original is very important in determining the quality of the final scanned image. The next few pages will give you more information on how to get top-quality scans.

## Text Scanning

Aside from scanning images, your scanner can scan text and deliver it into your word processor, eliminating the need for retyping. This is done through the use of Optical Character Recognition (OCR) software, which converts scans to text and retains text formats through the software's ability to recognize the shapes, shades and lines that make up individual characters.

Most Microtek scanners come with OCR software to provide you with maximum value for your scanner.

## Getting the Best Results

Scanning is an easy process: You simply put the image to be scanned on your scanner, run your scanning software, and click on the Scan button. The image is then delivered to your image-editing software, where it can be stored as a file.

For you to get the best results from your scans, however, it helps to be aware of variables that affect the quality of your scanning. This section discusses some of the most important factors affecting scanning, including the following:

- Resolution
- Color calibration
- Image enhancement
- File formats
- File storage and requirements
- Selecting your printing method

## Resolution

Resolution determines the level of detail recorded by the scanner, and is measured in dots per inch (dpi). The greater the dpi number, the higher the resolution and the resulting file size. Image quality improves with higher resolution, but only up to a certain point, after which increasing resolution simply makes file sizes unmanageable without yielding any visible improvement to the image. For most applications, scans of up to 300 dpi are adequate.

When dealing with resolution, it's important to distinguish between optical, or true, resolution, and interpolated resolution, which is resolution enhanced through software.

- Optical resolution is the key factor in determining the sharpness and clarity of an image.
- Interpolated resolution, or resolution enhanced through software, is useful for certain tasks, such as scanning line art or enlarging small originals.

### Choosing the best resolution setting

Scanning at a higher resolution requires more time, memory, and disk space. When choosing a resolution setting, consider the type of image you're scanning and the printing method. Printed images have their own resolution, as measured in lines per inch (lpi), which is distinct from the resolution of electronic images (as measured in dpi).

An easy way to determine the best resolution for your intended output is to find out the lines per inch (lpi) capability of your output device and multiply it by 1.5 to 2.0.

For instance, to tailor your scanned image to a typical magazine printing press that prints at 133 lines per inch, multiply 133 x 1.5 or 2.0, which gives 199.5 or 266. In this case, the optimal resolution setting for your image would then be 200 dpi to 266 dpi (depending on how high the output quality will be). Lpi varies, depending on the quality of the printing job. A newspaper uses approximately 85 lpi, magazines from 133 to 150 lpi, and fine art books may go as high as 200 to 300 lpi.

If you're outputting images to a monitor (such as doing multimedia work), you need not scan images higher than 72 dpi, as monitors are capable of only showing images up to 72 dpi. A higher-resolution image will not be any clearer on the monitor and will simply create larger files.

The table below shows optimal resolution settings for most needs. MPR below stands for "Match Printer's Resolution."

| Output Device | Line Art | Grayscale | Color |
|---|---|---|---|
| Black & white laser printer | MPR | 75 dpi | 75 dpi |
| Color desk jet, ink jet, thermal printer | MPR | 100-150 dpi | 100-150 dpi |
| Color dye-sublimation printer | MPR | MPR | MPR |
| Printing press or imagesetter | MPR | 150-300 dpi | 150-3200 dpi |

Remember that the higher the resolution, the larger your image file will be. For instance, an 8.5" x 11" color photograph scanned at 75 dpi takes up about 1.6 megabytes (MB). Doubling resolution to 150 dpi will increase the file size four times — to approximately 6.3MB! Going to 300 dpi will increase file size to 26.2MB.

What you need to do then is to select the lowest possible resolution that still gives you good image quality in order to keep file sizes manageable.

**Comparison of images at different resolutions**

**150 dpi**

**300 dpi**

The two images were scanned at different resolutions, but there isn't much difference in the printed result. This is because all printers and presses have their own maximum resolution. It's also because the final size is so small that anything over 150 dpi is really unnecessary.

### When to use high resolution

High resolution is important if you're processing an image through a high-end color system that carries continuous tone data from the scanner through the final film output. This is because high resolution can improve the sharpness and clarity of the dots that make up the image.

### When to use interpolated resolution

Interpolated resolution is useful for scanning line art or enlarging small originals.

- For line art: Set the resolution equal to that of your output device. For instance, if you're producing line art to be printed by a 1200-dpi imagesetter, you can interpolate resolution to up to 1200 dpi for superior results. This will produce smoother lines and eliminate some of the jaggedness characteristic of line art scans.

- For enlarging small originals: Let's assume that you scan a 1" x 2" photograph at 300 dpi, and that your maximum optical resolution is 300 dpi too. To enlarge the image to two times the original size without loss of detail, interpolate the resolution to 600 dpi. This way, the image retains clarity and sharpness even if the print size was doubled.

## Scaling

Scaling is the process of creating larger or smaller images in your scanning software so that you need not resize the images later when they are delivered to your image-editing program.

In the scanning software, scaling has an inverse relation to resolution: The lower the resolution, the larger the image can be scaled. At the highest resolution, images can only be scaled smaller.

To illustrate the use of scaling, assume you scanned a 2" x 2" image at 300 dpi. To double image size to 4" x 4" without loss of detail, increase scaling to 200% and maintain resolution at 300 dpi.

This is the same as scanning the image at 600 dpi at 100% scaling — and then using your image-editing software to enlarge the output. In the example above, image size was doubled through scaling alone without having to use the image-editing software.

## Dynamic range

Another important factor in obtaining quality scanned images is the dynamic range of a scanner.

Dynamic range is the ability of the scanner to register a wide range of tonal values — something from near white to near black. A scanner with a good dynamic range is able to map input shades correctly to the output shades, so you will be able to see more detail in an image.

A scanner with poor dynamic range, on the other hand, will not be able to detect as wide a range of tonal values. In this case, the scanner will fill in the shadow areas or lose all detail in the highlight in an attempt to map the colors correctly. What emerges will be an image with less detail.

Microtek scanners have a dynamic range capable of registering a wide palette of tones and translate these accordingly into photo-realistic color. For instance, the ScanMaker III, Microtek's 36-bit scanner, has a dynamic range of 3.4. (For comparison purposes, anything above 2.0 is good, and anything above 3.0 is impressive.)

## Color calibration and correction

Color calibration is the process of ensuring the accurate reproduction of color for images. Full color calibration is usually a two-step process: calibrating your input device, such as a scanner; and calibrating your output device, such as a printer or monitor. By calibrating your input and output devices correctly, color is captured accurately by your scanner and is reproduced faithfully on your monitor or printer as well.

To make sure that your scanner captures color accurately, Microtek developed DCR, or Dynamic Color Rendition.

DCR is a color calibration and correction system that compensates for the color shifts that occur invariably in all scanners. Because each scanner has its own unique "color signature," (one scanner sees red as "red" and another sees it as "magenta"), it makes sense to use DCR to ensure accurate reproduction of color.

Without DCR, the only way to correct color would be to do it in your image-editing software after scanning the image, and post-scanning color correction can be a lengthy and tedious process.

This does not mean that the colors will be correct once you print them; you still need a color management system to calibrate your printer as well. However, DCR eliminates the inaccuracies that come from the first round of the color reproduction process and saves you time from having to do post-scanning color correction.

A generic color profile ships with the ScanWizard for Windows scanning software which allows you to use the color correction feature, but in order to make the results even better, you should calibrate your scanner by using DCR. DCR comes standard on the ScanMaker III and is available as an option for all other color scanners.

For examples of images with and without Color Correction, see the color pages in this manual.

## Image enhancement

Several tools are available with your scanning software for adjusting the color and quality of images. Some of these tools include: Brightness, Contrast and Exposure; Shadows and Highlights; Curve; Filters; Tints; Auto; and Color Correction.

**To see examples of how each tool works in color, see the color pages in this manual.**

### Brightness, Contrast and Exposure

This tool changes the brightness and contrast of the entire image. An image with high contrast has less gray shades between black and white and appears to have less visible detail. On the other hand, an image with low contrast has more gray shades, has more visible detail, yet tends to look flat. Contrast determines the number of shades you get; brightness determines the intensity of those shades.

Exposure, on the other hand, allows you to increase or reduce available light to the image and may help more image detail emerge in the process.

**Original**

**Brightness increased**

**Brightness decreased**

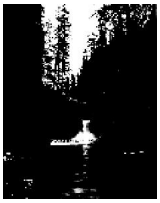
**Contrast increased**

**Contrast decreased**

### Shadows and Highlights

This tool lets you adjust the shadow and highlight areas of an image, allowing you to select a new shadow point to become the darkest value, or a new highlight point to become the lightest value. The effect of this is to bring out more visible detail in an image, especially if it has only a limited range of grays or colors.

**Original**



**Shadows emphasized**

**Highlights emphasized**

### Curve

This tool lets you modify the gamma, which is the contrast affecting the middle range of grays in an image. The Curve tool lets you modify the midrange of grays without dramatically altering the shadows and highlights. Using a combination of the Shadows and Highlights tool together with the Curve tool gives you the most precise control for adjusting the tonal values of your image.

**Original**

**Grays lightened**

**Grays darkened**

### Filters

The Filters tool lets you apply or create special effects to your images. The filters include Blur, Blur More, Sharpen, Sharpen More, Edge Enhancement, and Emboss. Below is an example.

**Original**

**Blur**

### Auto (Automatic Contrast Control)

This tool optimizes the contrast of scanned images by adjusting the gamma and shadow/highlight values. This is one of the simplest tools to use, requiring only the click of a button. It can have the most dramatic effect on your image, and its results are immediately visible.

**Original**

**Auto applied**

### For Color Images only

### Tints

This tool lets you adjust the hue and saturation of an image. The hue of an image is what distinguishes a color from another (whether it is red, green, blue, etc.), while saturation refers to the intensity of the color (more red, more green).

### Color Correction / DCR

This tool applies a generic color profile to your images to give it accurate, lifelike color. If you have Microtek's DCR color calibration and correction system installed, the Color Correction button will override the generic color profile embedded in your scanning software and apply DCR instead to the image.

## File formats

You will generally save your scanned images as graphic files. Several graphic file formats are available for use, and each file format has its own advantages and disadvantages.

To get the best scans, be familiar with the pros and cons of each file format and how they are compatible with your image-editing software and printing equipment.

| File format | Description |
|---|---|
| **TIFF** | Short for Tagged Image File Format, probably the most popular format. Adept at storing bitmaps in many different resolutions, color models, and compression types, and supported by many commercial applications.<br>Use the TIFF format whenever possible , since this is the most widely used. |
| **EPS** | Short for Encapsulated PostScript. Good for storing vector drawings, but not for line art. Ideal for print applications because it offers more control when printing to a PostScript printer. |
| **PSP** | Adobe Photoshop's internal image format. |
| **GIF** | A format used to store images with 256 colors or 256 shades of gray. Mostly used by BBS services and some low-end graphic applications. |
| **JPEG** | A compression algorithm used to store large color or grayscale files. Some versions of this compression format may result in minor degradation of image quality. |
| **PCX** | Developed by Z-Soft for use in various paint programs. Also suitable for scanned images and is widely supported for PC use. |

## Storage requirements
**(in kilobytes)**

The following chart shows you the storage requirements for black-and-white images, grayscale images, and color images in different sizes and resolutions. All sizes are in kilobytes (KB); 1,000 kilobytes is equal to 1 megabyte (MB). Example: 1,028KB = 1.02MB; 65,742KB = 65MB; 131,484KB = 131MB; 1,577,813KB = 1.5GB (gigabytes).

| | 75 dpi | 150 dpi | 300 dpi | 600 dpi | 1200 dpi | 2400 dpi |
|---|---|---|---|---|---|---|
| **Single-bit Black-and-White** | | | | | | |
| 8.5" x 11" | 65 | 257 | 1028 | 4,109 | 16,435 | 65,742 |
| 8.5" x 5.5" | 33 | 130 | 514 | 2,055 | 8,218 | 32,872 |
| 5" x 7" | 25 | 97 | 385 | 1,540 | 6,153 | 24,010 |
| 4" x 5" | 14 | 55 | 220 | 880 | 3,516 | 14,063 |
| 3" x 5" | 11 | 42 | 165 | 660 | 2,637 | 10,547 |
| **8-bit Grayscale** | | | | | | |
| 8.5" x 11" | 514 | 2,055 | 8,218 | 32,872 | 131,484 | 825,938 |
| 8.5" x 5.5" | 257 | 1,028 | 4,109 | 16,436 | 65,743 | 262,969 |
| 5" x 7" | 193 | 770 | 3,077 | 12,305 | 49,219 | 196,875 |
| 4" x 5" | 110 | 440 | 1,758 | 7,032 | 28,125 | 112,500 |
| 3" x 5" | 83 | 330 | 1,319 | 5,274 | 21,095 | 84,375 |
| **24-bit Color** | | | | | | |
| 8.5" x 11" | 1,541 | 6,164 | 24,654 | 98,614 | 394,453 | 1,577,813 |
| 8.5" x 5.5" | 771 | 3,082 | 12,327 | 49,307 | 197,227 | 788,907 |
| 5" x 7" | 577 | 2,308 | 9,229 | 36,915 | 147,657 | 590,625 |
| 4" x 5" | 330 | 1,319 | 5,274 | 21,094 | 84,375 | 337,500 |
| 3" x 5" | 248 | 989 | 3,955 | 15,820 | 63,282 | 253,125 |
| **36-bit Color** | | | | | | |
| 8.5" x 11" | 2,311 | 9,245 | 36,980 | 147,920 | 591,680 | 2,366,719 |
| 8.5" x 5.5" | 1,156 | 4,623 | 18,490 | 73,960 | 295,840 | 1,183,360 |
| 5" x 7" | 865 | 3,461 | 13,843 | 55,371 | 221,485 | 885,938 |
| 4" x 5" | 495 | 1,978 | 7,910 | 31,641 | 126,563 | 506,250 |
| 3" x 5" | 371 | 1,484 | 5,933 | 23,731 | 94,922 | 379,688 |

## Selecting the printing method

Scanned images can be printed on a variety of devices. Here are some of the most common ones:

- Black and white printers (laser, ink jet, dot matrix) are suitable for producing text and line art, but they are not as good for printing grayscale images. You can use these printers to reproduce photographs for FPO (For Position Only) purposes, as when you need to show a draft of how a document is laid out.

- Ink jet and desk jet color printers can produce color or grayscale images that may range in quality from coarse to medium. Such printers work well for small quantities of color images or for proofs of images that will be printed later on a printing press. These printers usually print 256 colors or 256 shades of gray but do not register colors as well. Images usually end up slightly coarse or washed out.

- Dye-sublimation color printers print images in photo-realistic color. Use these printers to print color images with continuous tone for small print jobs or for proofs of large print jobs that will be done later on an imagesetter.

- Printing presses can produce work of high quality. For these types of printers, you can scan your images and then send the files to a service bureau or printing company, which typically uses a high-resolution imagesetter and can print high-quality text and grayscale images. If you are producing full-color images, scan them in color, then use your image-editing software to create the color separation files needed to print color on a printing press.

# Quick Tips for Best Scans

Whenever you scan, keep some goals in mind. How do you want the final scanned image to look? Where will it be used? What image-editing software will you use? How will the image be reproduced, on what type of printer and what type of paper?

With these goals in mind, you can then proceed to obtain quality scans. Here are a few tips to consider to obtain the best scans.

### Get the necessary hardware

Make sure your scanner matches your scanning needs. A 36-bit scanner will produce superior color and grayscale results to scans made by a 24-bit scanner. For example, setting a 36-bit scanner to the scan mode *Millions of colors* will produce a far better 24-bit image than if a 24-bit scanner used the same *Millions of colors* setting.

In addition, take note of the following:

- Make sure you have enough RAM and available storage space in your computer. Scanned images need more memory than text files, so you may need to add RAM and storage options. 16MB of RAM is adequate, but more RAM will speed up your processing.
- Check if your video card and monitor support the resolutions you need to display high-quality images. For optimal quality, use a 24-bit (also known as True Color) card that is set to "millions of colors" or "16.7 million colors."

### Use a good original

A good original is still important in determining the final quality of the scanned image. Even if your scanning software or image-editing package has tools to improve image quality, they work only up to a point. Images that are out of focus, dirty, or poorly exposed may never look great — no matter how much time you spend retouching them.

Also, do not use halftoned images or images that have been printed, such as those taken from a magazine. If you scan such pictures, you will obtain something called a moiré, which is an undesirable pattern in color printing. Even though the ScanWizard software has a feature for removing moirés, it's better to start out with a clear original in the first place. (For more information on moirés and to see what they look like, see the color pages and the section on Descreen in the Reference.)

### Keep your scanner clean

Make sure your scanner glass is clean before you scan images. This way, you don't pick up flecks of dust along with the image when you scan. To clean the scanner glass, use alcohol on a lint-free cloth and clean the glass carefully.

### Select the right image type and settings

Choose the right image and set the correct resolution and scaling before you scan.

- If you have single-color art (even if it isn't black and white), scan it as line art.
- For black and white photos, scan these as grayscale (not color) to generate smaller files.
- If you plan to print a color scan in black and white, scan it in grayscale.

Finally, when scanning (whether in color or another mode), choose the correct resolution. For most laser-printed photographs, 75 to 100 dpi is enough. For more details, refer to the section on resolution for determining the best resolution setting for your scanning needs.

### Use your tools

Use the Color Correction feature in the ScanWizard scanning software when scanning color images to obtain more accurate colors. Certain scanner models come with a target and the Microtek DCR color calibration system, which you can use to calibrate your scanner and create color correction profiles. A generic color profile is provided, however, for models that do not come with a target or DCR to ensure accurate colors when scanning.

In addition, experiment with the tools in your scanning software. Use brightness and contrast, for instance, to adjust the look of the image as a whole, or use either the shadows and highlights tool or the curve tool to work on specific areas of the image (such as lightening up an excessively dark area).

# 2 Hardware Installation

This section provides information on installing the hardware for your scanner and other hardware-related information.

**Federal Communications Commission Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient/relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: A shielded interface cable with ferrite core installed on the scanner connector end must be used with this equipment.

**Caution**

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

## Installing the scanner

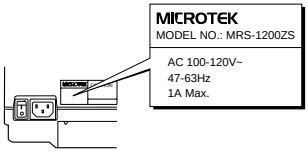
The hardware installation procedure for your scanner will vary, depending on the scanner model you have purchased.

For the most up-to-date information on hardware installation of your scanner, refer to the documentation that comes with your scanner (printed on colored paper stock), titled *Microtek Scanner Installation Guide*. The guide also includes a section on how to use the various software in your scanner package, and provides basic information on how to scan images and text.

### Voltage

The voltage of the scanner is indicated at the back of the scanner near the power switch. Voltage is preset depending on your area, ranging from 100V to 120V (U.S. and Canada), or 100V to 240V (Europe and other parts).

In the unlikely event that you receive a scanner with a voltage setting different from the voltage level used in your area, call your dealer to return the scanner. Scanners marked with 100V to 120V will not operate with 220-volt power in Europe or South America.




**U.S. voltage requirements**

## Operating the Scanner

Once the scanner is properly connected, you can perform a power-on test. To do this, turn on the scanner, and you will see the following:

**1** The POWER indicator on the front panel of the scanner lights up.

**2** Next, the READY indicator beside the POWER indicator flashes briefly. After a 30-second warm-up period, the scanner carries out a self-test, with the scanner carriage moving back and forth about a half-inch. If no problems are detected, the READY indicator stays lit.

**Note** If there are problems with the POWER and READY indicators, see the *Troubleshooting* section in the Appendix.

**3** The fluorescent lamp inside the scanner should be on too by this time. The lamp should never go off while the scanner is on.

**Note** If the scanner lamp doesn't come on, starts to flicker, or gets dim, see the section *Replacing the scanner lamp* at the end of this chapter.

## Using scanner accessories

Your scanner is a powerful imaging device, but there are scanner accessories available that can add to your scanning efficiency. These accessories include the Transparent Media Adapter and the Auto Document Feeder.

- The Transparent Media Adapter (TMA) doubles the power of your scanner as it allows you to scan transparencies. TMAs have their own source of lighting, which is crucial to scanning transparencies as it prevents images from being exposed to too much lighting and getting washed out as a result.

**Transparent Media Adapter attached to a ScanMaker IISP**

- The Auto Document Feeder (ADF) simplifies the scanning processing as it allows you to scan up to 50 pages of text unattended and works with most popular Optical Character Recognition (OCR) software.

**Note** The ADF can be used to scan text and graphics in black and white line art, halftone, or grayscale. It cannot be used to scan color images.

**Auto Document Feeder**

## Returning scanners for repair

Your Microtek scanner has been built to exacting standards. Just like any piece of electrical equipment, however, your scanner or the delicate parts in it are subject to wear and tear, and may malfunction for any number of reasons. If your scanner needs to be serviced or repaired, do the following:

**In the United States (continental U.S., Alaska, Hawaii):**

- Call Microtek Technical Support to get a Repair Merchandise Authorization (RMA) number. You can also call Microtek's fax-back system (at 310-297-5101) to get an RMA request form faxed to you; request Document No. 414. Fill out the form and fax it back to Microtek; you will then be issued an RMA number.
- Lock the carriage (discussed in the next section) if your scanner needs to be locked. (Not all scanners require this.)
- Pack the scanner in the original box without any software, and send the interface card and cables only if applicable and asked to do so. If you have lost the original box, you will need to buy one from Microtek for a nominal fee.
- Send the scanner to Microtek Lab, Inc., 3715 Doolittle Drive, Redondo Beach, CA 90278. Make sure the RMA number is on the outside address label.

**Important** Make sure the RMA number is on the address label and is visible. Packages without an RMA number or with the wrong RMA number on the outside of the box will be refused and returned to sender.

**Outside the United States:**

- For Canadian users: Call Microtek Technical Support. You will be given an RMA number and address to where your scanner can be sent for repair.
- **For users in parts other than the U.S. or Canada:** Call your authorized dealer for further instructions.

## Locking the scanner carriage

You need to lock the scanner carriage if you wish to ship back your scanner for any reason. The carriage must be locked to prevent the mechanism from moving during shipping and getting damaged in the process.

**Important** Microtek will not be liable for scanners that are damaged during transit because the carriage had not been locked or was not packed in the original or authorized packaging.

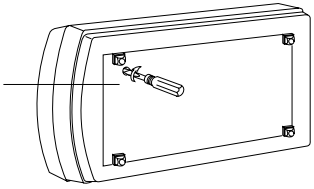
**Note** For scanners with parallel-port connectors (such as the ScanMaker V300, V310, V600, etc.), there is no need to lock the scanner.

### Locking models with a screw-type lock

1. Turn the scanner off and then back on. The carriage will move forward a bit and then return to its standby position. When the carriage stops moving, turn off the scanner. Be sure that the carriage is in the standby position before you tighten the locking screw. Otherwise, the carriage won't be locked properly and can get damaged during shipping.

2. Turn the scanner on its side and locate the locking screw at the bottom of the scanner. To lock, turn the locking screw clockwise one-fourth turn while pushing it in simultaneously. The screw should stay in and not pop back out.

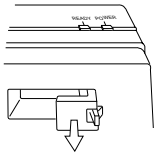
Locate lock at bottom of scanner, then turn screw clockwise to lock



### Locking models with a latch-type lock

1. Turn the scanner off and then back on. The carriage will move forward a bit and then return to its standby position. When the carriage stops moving, turn off the scanner.

2. Turn the scanner on its side to locate the carriage lock. Pull the latch (the carriage lock) down (or out) until the handle on the side of the latch locks onto the chassis. Make sure the latch is pulled out completely (not just halfway). You don't need to re-insert the original piece of styrofoam under the latch.



**Pull carriage lock down**

**If the carriage lock comes off:**

If you pull the carriage lock down when the carriage is not in the home position, the carriage lock may come off. To replace the carriage lock, do the following:

1. Unplug the cables from the scanner.
2. Put the SCSI ID on 7.
3. Turn on the scanner. The carriage will start moving towards the back of the scanner.
4. Turn off the scanner when the lamp is halfway towards the back.
5. Insert the lock into position, and push it in all the way.
6. Change the SCSI ID to a number between 0 to 6.
7. Turn on the scanner and wait for about 30 seconds until the carriage stops moving.
8. Turn off the scanner and pull the lock to properly lock the carriage.

**Note** In the event of a scanner malfunction, or if Item #4 does not work because there is no power, you can also rest the scanner on its back and wait for the carriage to start moving to the back.

## Replacing the scanner lamp

If the lamp inside your scanner does not come on or if it begins to flicker or dim after some time, the lamp may need to be replaced.

If this is the case, call the Microtek AutoTech fax-back system at 310-297-5101, then listen to the recorded instructions to request a document on how to replace the scanner lamp.

# 3 Software Installation

The software installation procedure is continually updated to reflect the most current software bundles of your scanner.

For the latest information on software installation, please refer to a document entitled *Microtek Scanner Installation Guide*, which is printed separately and is included with your scanner package.

# 4 Sample Scanning

ScanWizard is easy to use. The following pages show you how to use the software to scan line art, grayscale, and color, as well as how to enlarge your view of an image and use image-enhancement tools. The information covered in this section includes the following:

- Overview of ScanWizard
- Scanning a single-bit image (line art or halftone)
- Scanning a grayscale image
- Scanning a color image
- Enlarging the view of an image
- Enhancing images
- Using the Advanced Image Enhancer
- Important notes on scanning

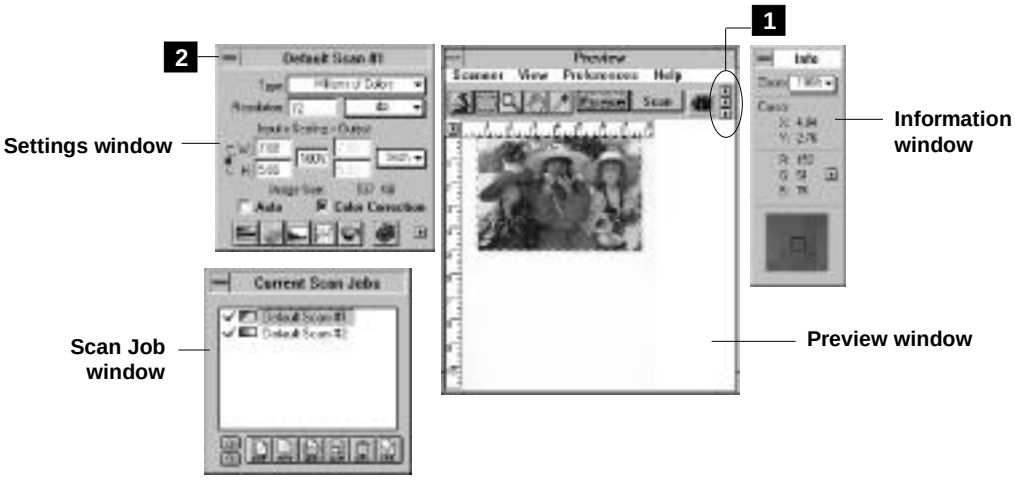
## Overview

ScanWizard is the program that acts as a bridge between your scanner and your image-editing software (such as Adobe Photoshop or Ulead PhotoImpact, etc.) ScanWizard captures the image placed on your scanner and then delivers the image when it is scanned to the image-editing application, where the scanned image can then be saved or edited further.

Here are some things you can do with ScanWizard:

- Select the type of image to be scanned. For example, you can have a color photo and scan it in the same color mode, or you can scan it in a different mode such as grayscale or line art.
- Perform a preview or preliminary scan, which allows you to see a preliminary view of the image before it's actually scanned. Previewing an image allows you to do further enhancements if necessary, and it also lets you select the final area to be scanned in case you wish to crop the image. When the image is ready to be scanned, clicking on the Scan button will activate the scanning process, and the image is then delivered to your target application.
- While in preview mode, the image can be adjusted through the image-enhancement tools. These tools allow you to adjust image features such as brightness, contrast, and exposure; shadows and highlights; gamma or midtones (mid-gray levels); hue or saturation; and apply various filters for special effects.
- Clicking on an image-enhancement tool calls up the Advanced Image Enhancer (AIE) dialog box. While in the AIE dialog box, you can see thumbnail displays of the image, make changes and see the effects applied in real time (see "before" and "after" versions instantly). These functions are among the most powerful features of ScanWizard.
- Create multiple scan jobs. A scan job is simply a task that you designate the scanner to process and scan. For example, one scan job may be in grayscale and another may be in color. The two scan jobs can then be manipulated and scanned separately, and you can switch between scan jobs easily while making changes. ScanWizard's ability to process various scan jobs concurrently adds tremendous flexibility to scanning.
- When changes are made to the image, the changes can be easily verified through the Information window, which displays changes to RGB values. Such information can be helpful for those working with color values.

ScanWizard: The Four Windows




The four windows of ScanWizard:

- The *Preview* window has commands and tools for controlling the scanner.
- The *Settings* window contains scanning parameters for outputting the image and includes the image-enhancement tools of the software.
- The *Information* window provides information on the preview image, such as pixel and color information.
- The *Scan Job* window provides key functions in processing your scan jobs.

To open and close the windows:

**1** Click on these arrows to open the Settings, Scan Job, and Information windows.

**2** Double-click on the close box at the top left corner of each window to close the window. When you double-click on the close box of the Preview window, you will exit the ScanWizard.

## Scanning a single-bit image (line art or halftone)

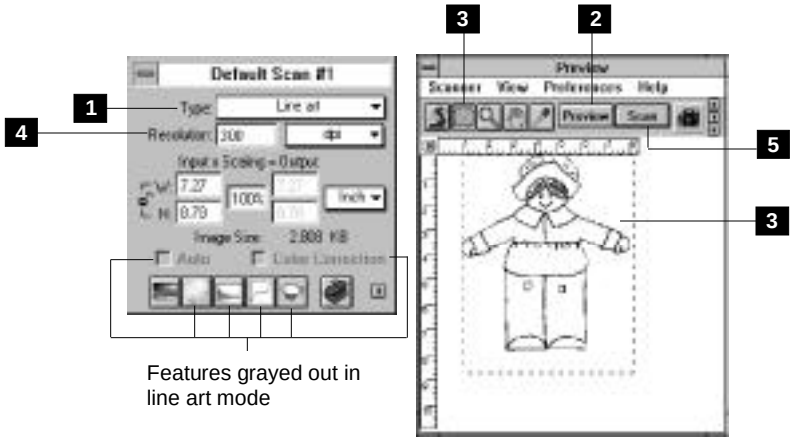
**1** Go to the Settings window, and from the Type menu, make your selection.
- Choose *Line Art* if you're scanning purely black or white images with no shades of gray, such as pen-and-ink drawings, logos, and sketches. Line art also applies if you're scanning an image with just one color (like a mechanical drawing or blueprint).
- Choose *Halftone* to scan the image as a halftone, and select the halftone pattern from the submenu that appears. A halftone image is like one you see in newspapers — there is only black and white, but the eye is fooled into seeing gray because of the way dots in the image are arranged.

**2** Click on the *Preview* button in the Preview window. In moments, a preliminary view of the image will appear in the preview area.

**3** Click on the *Scan Frame* tool. With the pointer now a crossbar, move to the image and define the scan frame (by holding down the mouse and dragging it to draw a box). The scan frame will be enclosed by dotted lines and will be the actual area that is scanned when you click on the Scan button.

**4** At the Settings window, set the *Resolution*. For now, select 300 dpi. But for optimal results, select a resolution that matches the resolution of your output device.

**5** To scan the image, click on the *Scan* button in the Preview window. The image will be scanned and delivered to your image-editing software, where it can be saved as a file.



## Scanning a grayscale image

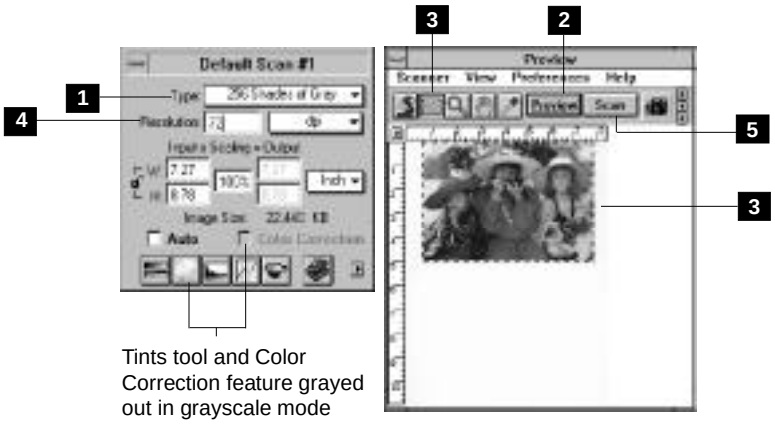
1. Go to the Settings window, and from the Type menu, choose *256 shades of gray.*

2. Click on the *Preview* button in the Preview window. In a few moments, a preliminary view of the image will appear in the preview area.

3. Click on the *Scan Frame* tool. With the pointer now a crossbar, move to the image and define the scan frame (by holding down the mouse and dragging it to draw a box). The scan frame will be enclosed by dotted lines and will be the actual area that is scanned when you click on the Scan button.

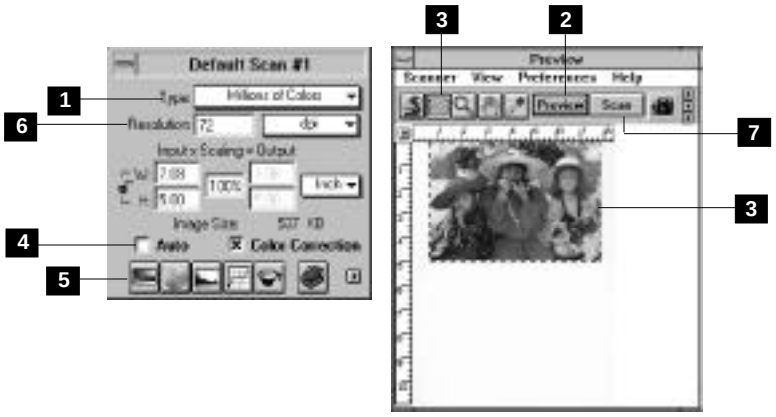
4. At the Settings window, set the *Resolution*. Take note of the following:
   - Do not select a resolution setting which is the same as that of your printer, unless you have a dye-sublimation printer. For now, set resolution at 72 or 75 dpi.
   - For laser printers, as well as inkjet and bubblejet color printers, 75 to 100 dpi is enough.
   - For outputting to an typesetting machine at 1200 or 2400 dpi, set resolution at 300 dpi.

5. To scan the image, click on the *Scan* button in the Preview window. The image will be scanned and delivered to your image-editing software, where it can be saved as a file.



## Scanning a color image

1. Go to the Settings window, and from the Type menu, choose *Millions of colors.*
2. Click on the *Preview* button in the Preview window. In a few moments, a preliminary view of the image will appear in the preview area.
3. Click on the Scan Frame tool. With the pointer now a crossbar, move to the image and define the scan frame (by holding down the mouse and dragging it to draw a box). The scan frame will be enclosed by dotted lines and will be the actual area that is scanned when you click on the Scan button.
4. If the image appears dark to you, click on the *Color Correction* button in the Settings window.
5. To adjust image quality, click on the *Image Enhancement tools* in the Settings window. These tools are (left to right) Brightness, Contrast and Exposure; Tints; Shadows and Highlights; Curve; Filters; and More Options. For more details on how to use these tools, see the *Reference* section.
6. At the Settings window, set the *R*esolution. Take note of the following:
   - Do not select a resolution setting which is the same as that of your printer, unless you have a dye-sublimation printer. For now, set resolution at 72 or 75 dpi.
   - For laser printers, as well as inkjet and bubblejet color printers, 75 to 100 dpi is enough.
   - For outputting to an typesetting machine at 1200 or 2400 dpi, set resolution at 300 dpi.
7. To scan the image, click on the *Scan* button in the Preview window. The image will be scanned and delivered to your image-editing software, where it can be saved as a file.



## Enlarging the view of an image

Click on the Preview button. When the preview image appears, do either of the following:

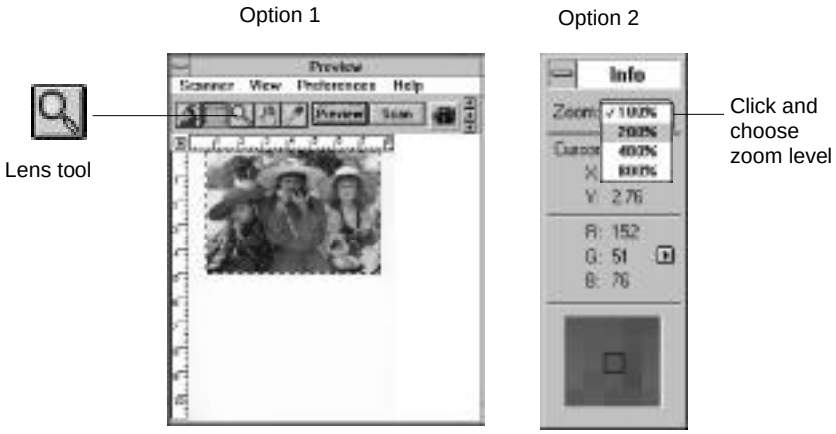
Option 1

1. Click on the *Magnifying Lens* tool (3rd tool from the left in the Preview window). The cursor will change to a magnifying lens with a plus sign in it.
2. Move the cursor to inside the image and click. The area where the cursor is will be zoomed in, enlarging your view of it. Clicking successively will enlarge your view of the image in the ascending order on the zoom scale — from 100% to 200%, to 400%, and to 800%.

   To reduce your view of the image after it was magnified:
   Hold down the *Shift* key on your keyboard, move the pointer to any portion of the image, and click on the mouse simultaneously. The magnifying lens will show a minus sign in it, at the same time reducing your view of the image. Clicking successively will continue to reduce the image until it is restored to its original scale.

Option 2

1. Go to the View menu in the Preview window, and choose the *Show Info window* command.
2. Click on the *Zoom Level Display* in the Information window. From the drop-down list, select your zoom scale — 100%, 200%, 400%, or 800%.



## Enhancing images

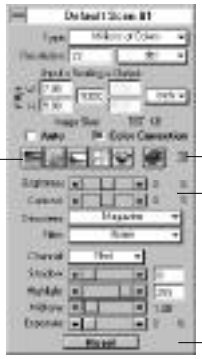
This section discusses how to use the Image Enhancement tools in the scanning software for your images. The image enhancement tools are located in the Settings window and include *Brightness, Contrast and Exposure*; *Shadows and Highlights*; *Curve*; *Tints*; *Filters*; and *More Options*. In addition, you can use the *Auto* and *Color Correction* buttons to optimize image quality.

- The *Auto* button optimizes contrast for the image. It operates by calculating the settings of the image part within the scan frame, and then applying those settings to the scan frame. Do not use this option with *Color Correction*.
- The *Color Correction* button is turned on by default, and it applies a generic color profile to your image to compensate for the minor color shifts that occur in all scanning. If you have Microtek's DCR (Dynamic Color Rendition) color calibration system installed, the Color Correction feature will apply DCR instead of the generic color profile. (DCR is an option.) Do not use this option with any other setting, such as the *Curve* tool or *Auto*.

### Using an image enhancement tool

- Click on an image enhancement tool. The Advanced Image Enhancer (AIE) dialog box will come up (see next page), and you can then apply image enhancements there and also switch to other tools while in the AIE dialog box.
- Click on the *Window Expansion* button in the Setting window (see graphic below). This will reveal the bottom half of the Settings window, with the image enhancement controls corresponding to the image enhancement buttons in the upper half of the window. The *Reset* button at the bottom of the window has the same function as the Reset button in the AIE dialog box.

Use the first option for more precise control over adjustments and to see "before" and "after" versions of the image. Use the second option for quick results once you have become more familiar with these tools.


Click on any of the image-enhancement tools to adjust your image. The AIE dialog box will then appear (see next page).
Click here to see bottom half of window
Bottom half of window has controls corresponding to image-enhancement buttons.

## Using the Advanced Image Enhancer

When you click on any of the Image Enhancement buttons in the Settings window, the Advanced Image Enhancer (AIE) dialog box appears. In this dialog box, you can do the following:

**1** Select the scan job and image to which image enhancement controls will be applied. A scan job is a task that you designate the scanner to scan and process, and the scan job in the AIE dialog box corresponds to the scan job in the Scan Job window. If you have multiple scan jobs open, you can switch among these jobs and see the image to be processed.

**2** See a thumbnail of the image captured by your scanner, and see how the image changes when adjustments are applied to it. The "before" and "after" images are the left and right thumbnails (2a and 2b) in the dialog box.

**3** Select another image enhancement tool by clicking on any of the buttons displayed in the vertical toolbar on the right side of the dialog box.

**4** Click on an action button to achieve a particular effect. These buttons are on the upper right side of the dialog box.

- Click OK to accept changes you have made and to close the AIE dialog box.
- Click Cancel to abandon all changes and to close the AIE dialog box.
- Click Reset to restore settings to default. When you do this, the Reset dialog box appears, allowing you to reset your settings.
- Click Revert to cancel out the effects of the currently used tool. If you have used three tools, for instance, Revert will preserve the changes of the first two tools and ignore the changes made by the third.

## Important scanning notes

Here are some tips to help you with scanning. If you're not familiar with the scanning process, review the preceding pages on the individual scanning tasks to get a feel for the software and how it works. Also, if some of the concepts discussed in these pages are not familiar to you, see the *Reference* section of the manual for a detailed discussion.

**For previews and scans**

- Select the image type correctly when you do a preview or scan. For instance, if you're only previewing or scanning grayscale images, do not select a color mode, as this slows down the process and creates bigger files than is necessary. If you're only previewing grayscale images, you can turn off the *Live Preview* option in the Preview Setup command.
- Scan Frame tool: At its simplest, the tool is used to crop preview images for final scanning. However, you can also use the Scan Frame tool to create multiple scan frames, and with the creation of multiple scan frames, this means you're actually creating duplicate scan jobs (based on the current scan job). Each scan frame (and by extension, each scan job) can have its particular settings, so that one scan job can be in grayscale; another in color with a certain brightness setting; and yet another in color with a filter.
- Zoom Preview tool: Use this tool to enlarge a part of the preview image and then previewing it in high resolution. The enlarged view obtained from the zoom preview tool is NOT the same as the view obtained from the Magnifying Lens tool, which is simply an enlarged view (but not in high resolution).
- Input-Output dimensions and Aspect Lock: Use the input dimensions to specify your scan frame; or if you wish, you can simply drag on the scan frame to whatever size you want, and the dimensions will be reflected automatically in the boxes for input width and height. The input dimensions can be changed only if your Aspect Lock is OFF.

  The output dimensions, on the other hand, determine the width and height of your image when output to a monitor or printer. The output dimensions can be changed only if the Aspect Lock is ON. The output dimensions are calculated dynamically, and the system looks at other variables such as your resolution and scaling to determine the final output dimensions. This means that you may specify output dimensions of 5" x 7", but because of intervening variables, the actual output dimensions may be 4.85" x 6.9" — which is the closest the system can produce given your other variables.
- Before scanning an image, select the correct resolution setting. Remember that overly high settings slow down your scanning and create huge unmanageable files. For more details, see the discussion on resolution in the *Basic Concepts* and the *Reference* section.

### For image enhancement

- By default, the *Color Correction* button is turned on, which means your image is color corrected as a matter of course to compensate for the minor color shifts that normally occur in all scanning. If you have Microtek's DCR installed, the DCR color profile is applied instead of the generic color profile.
- One useful image-enhancement control is the *Auto* button, which optimizes contrast for the entire image. Auto works by calculating the settings of the image part inside the current scan frame, and then applies those settings to the scan frame**.** If your scan frame encloses a dark portion and then you apply Auto, this will have the effect of lightening the dark portion (the part of the image within the scan frame). Conversely, if your scan frame encloses a light portion and then you apply Auto, this will make that light part darker. In both cases, the pixels are remapped to a broader range, so that the image parts in the scan frame are darkened or lightened accordingly.
- Use the powerful image enhancement tools to improve your image if necessary, and familiarize yourself with the features of the *Advanced Image Enhancer* (AIE) dialog box. This is one of the strengths of the software. While in the AIE dialog box, you can see thumbnails of the image, make image enhancements there, and see effects of the changes ("before" and "after" versions ) in real time. You can also switch from one tool to another, as well as switch among various scan jobs if you have multiple scan jobs. Familiarize yourself too with the various action buttons in the AIE dialog box and how they work. This is important.

### For scan jobs

- Use the flexibility provided by the scan job functions to process your various scans. With the Scan Job window, you can (among other things) create new scan jobs, copy settings for a duplicate scan job, and save scan jobs as templates.
- To master the intricacies of the scan job functions, familiarize yourself with the usage of the Scan Frame tool and the Smoked Glass Background feature, both of which are linked to the functions of the scan job. This is discussed in the *Reference* section.

# Auto and Color Correction

**Original**

**Color Correction applied:**
**Scanned image matches original**

**Auto control applied:**
**Contrast optimized for image**

## Brightness and Contrast

**Original**

**Brightness increased**

**Brightness decreased**

**Contrast increased**

**Contrast decreased**

## Exposure and Saturation

**Original**

**Red exposure increased**

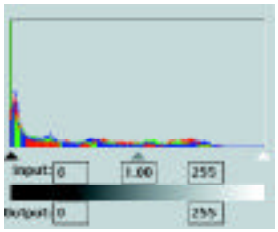
**Green exposure increased**

**Blue exposure increased**

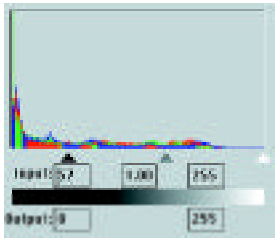
**Saturation increased**

**Saturation decreased**

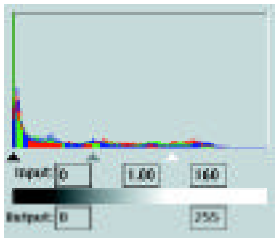
## Shadows and Highlights



**Original image and original input values**

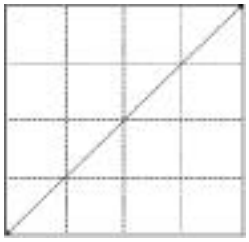


**Shadows emphasized and correspoding changes to input values**



**Highlights emphasized and corresponding changes to input values**

# Curve



**Original image with straight diagonal curve**

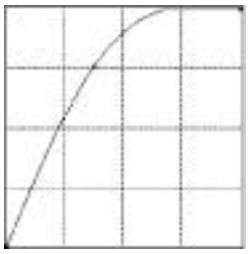


**Image with curve moved up**

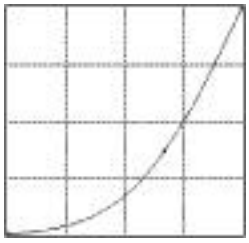


**Image with curve moved down**

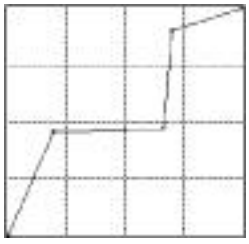


**Image posterized with corresponding curve**

## Tints

**Original**

# Filters

**Original**

**Blur**

**Blur More**

**Sharpen**

**Sharpen More**

**Edge Enhancement**

**Emboss**

## Descreen

**Before Descreen: Image scanned from a printed page, resulting in moirés**

**After Descreen: Same image scanned with descreen turned on (magazine option, 133 lpi)**

# 5 Reference

This section is a listing of features found in the *ScanWizard for Windows scanning software. The reference information is organized in four parts, following the structure of the software which shows the four major windows of the program (Preview, Settings, Information, and Scan Job).

### Twain compliance

ScanWizard for Windows is a Twain-compliant program. This means that it conforms to the Twain software industry standard for controlling imaging devices such as scanners, film recorders, and video capture cards.

The Twain standard allows software applications and hardware imaging devices to communicate directly. In practical terms, this means that while using applications that support Twain (such as Adobe Photoshop), you can access the scanner through ScanWizard for Windows. When a scan is performed, the captured image is then automatically placed inside the original application.

With a Twain-compliant application, you do not have to leave the application you are working in, and the captured image does not have to be saved as a separate file before being used by the application. This allows you to scan images right into your favorite image-editing application, word processor, spreadsheet, or any Twain-compliant application that makes use of images.

*All references made in the manual to the scanning software are to the **ScanWizard for Windows**. In other packaging components, the scanning software may also be called the ScanWizard scanner controller.

# Overview

ScanWizard is the program that acts as a bridge between your scanner and a target application, such as Adobe Photoshop orUlead PhotoImpact. In practical terms, this means you use ScanWizard to scan or capture images placed on your scanner and place them in a target application. Once the images are delivered to the target application, they can be saved or edited further.

**Some of the things you can do with ScanWizard for Windows**

- Select the type of image to be processed and scanned. You can put one type of image on the scanner and scan that in its original form, or you can scan it in another form altogether. For example, you can have a color photo and scan it in the same color mode, or you can scan it in a different image type such as grayscale or line art.

- While in preview mode, the image can be adjusted through the image-enhancement tools in the Settings window. These tools allow you to adjust image features such as brightness, contrast, and exposure; shadows and highlights; gamma or midtones (mid-gray levels); hue or saturation; and apply various filters for special effects.

- Clicking on an image-enhancement tool calls up the Advanced Image Enhancer (AIE) dialog box. While in the AIE dialog box, you can see thumbnail displays of the image, make changes and see the effects applied in real time (see "before" and "after" versions instantly). You can also switch to another tool without leaving the AIE dialog box, as well as switch among scan jobs if you have multiple scan jobs. The image-enhancement functions are among the most powerful features of the ScanWizard.

- Perform a preview or preliminary scan. This is done with the Preview button in the Preview window, and it allows you to see a preliminary view of the image before it's actually scanned. Previewing an image allows you to do further enhancements if necessary, and it also lets you select the final area to be scanned in case you wish to crop the image. When the image is ready to be scanned, clicking on the Scan button will activate the scanning process, and the image will then be delivered to your target application.

- When changes are made to the image, the changes can be easily verified through the Information window, which displays changes to RGB values. This information can be helpful for those working with color values.

- Create multiple scan jobs. A scan job is simply a task that you designate the scanner to process and scan. For example, one scan job may be in grayscale and another may be in color. The two scan jobs can then be manipulated and scanned separately, and you can switch between scan jobs easily while making changes. The ScanWizard's ability to process various scan jobs concurrently adds tremendous flexibility to scanning.

## ScanWizard for Windows

ScanWizard for Windows consists of four major windows: Preview, Settings, Information, and Scan Job.

The Preview and Settings windows appear automatically after the ScanWizard is started up. The Scan Job and Information windows, however, are hidden, and to see them, go to the View menu in the Preview window and click on the commands *Show Scan Job window* and *Show Info window.*

Settings window contains scanning parameters for outputting the image and includes image-enhancement tools
Scan Job window provides key functions in processing scans
Information window provides information on the preview image
Preview window has commands and tools for controlling the scanner
Current Scan Jobs

On the very first time that ScanWizard is started up, only the Preview and Settings windows will appear. To see the Scan Job and Information windows, go to the View menu and choose the *Show* command for both windows.

The next time you start up ScanWizard, the screen will look exactly like the last time you exited the software. This means that if you had all four windows open the last time you quit ScanWizard, the same four windows will appear the next time you start it up.

## The Preview Window

The Preview window is the most prominent window of the four major windows, and it includes the various commands and tools for controlling the scanner.

**Elements of the Preview window**

**1** The **Menu Bar** includes the different menus for setting up the scanner (Scanner menu), controlling view options (View menu), customizing the software (Preferences menu), and accessing online help (Help menu).

**2** The **Tool buttons** simplify the performance of certain tasks. The Tool buttons are (left to right) Zoom Preview, Scan Frame, Magnifying Lens, Hand, and Color Picker.

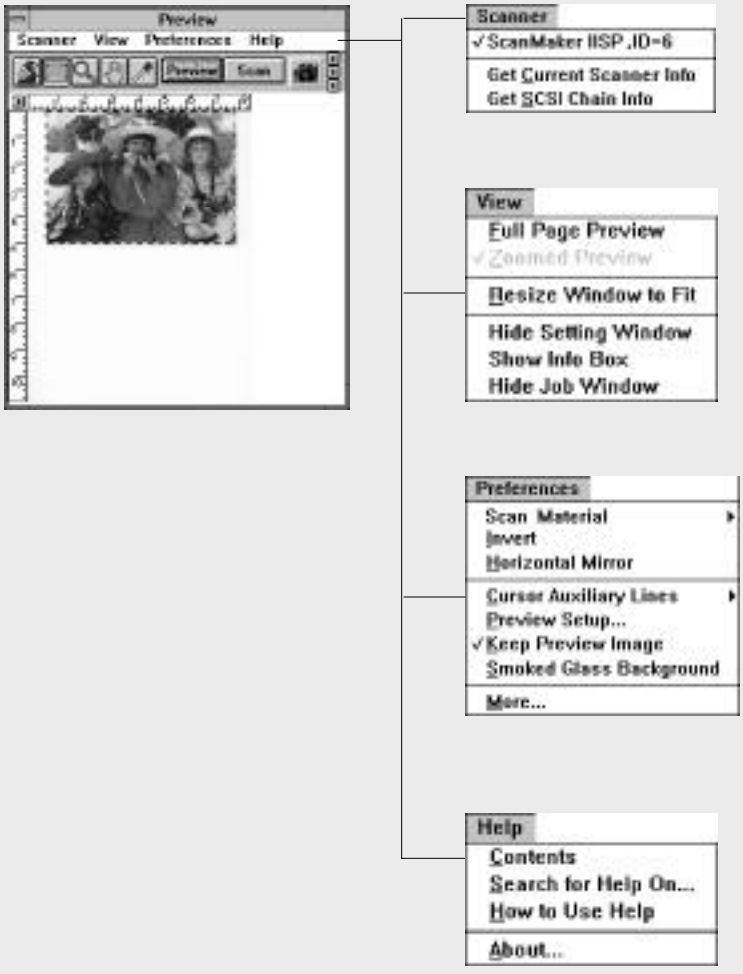
**3** The **Action buttons** generate a specific action from the scanning software. The Action buttons include Preview and Scan.

**4** The **Scan Material Status icon** shows your scan material, whether it's reflective, positive, or negative.

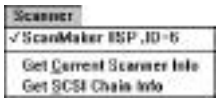
**5** The **Preview Area** is where the preview image appears after you click on the Preview button.

**6** **Rulers** are located on both sides of the window to help you with measurement and alignment. The **ruler unit** can be selected by clicking on the arrow at the 0,0 point of the rulers.

## The Menu Bar


Preview
Scanner View Preferences Help
Scanner
✓ScanMaker IISP ,ID=6
Get Current Scanner Info
Get SCSI Chain Info
View
Full Page Preview
✓Zoomed Preview
Resize Window to Fit
Hide Setting Window
Show Info Box
Hide Job Window
Preferences
Scan Material
Invert
Horizontal Mirror
Cursor Auxiliary Lines
Preview Setup...
✓Keep Preview Image
Smoked Glass Background
More...
Help
Contents
Search for Help On...
How to Use Help
About...

## The Scanner Menu



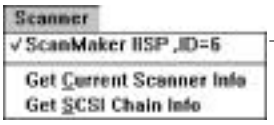

The Scanner Menu lets you:

- Show your scanner model or select a scanner if you have multiple scanners
- Get information about your scanner
- Get information about the SCSI chain

### Scanner Model

The top of the scanner menu displays the scanner model you're using and its SCSI ID. If you have multiple scanners on your system, all the scanners are shown with their respective SCSI IDs, and the current scanner is indicated by a check.

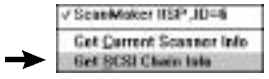
Only one scanner can be accessed at a time. To switch among various scanners, select the scanner to be used.




The scanner is displayed here with its SCSI ID. The The current scanner is marked by a check.

### Get Current Scanner Info

This command provides information about your current scanner. When you choose this command, a dialog box appears showing the scanner model, SCSI ID number, and firmware version.

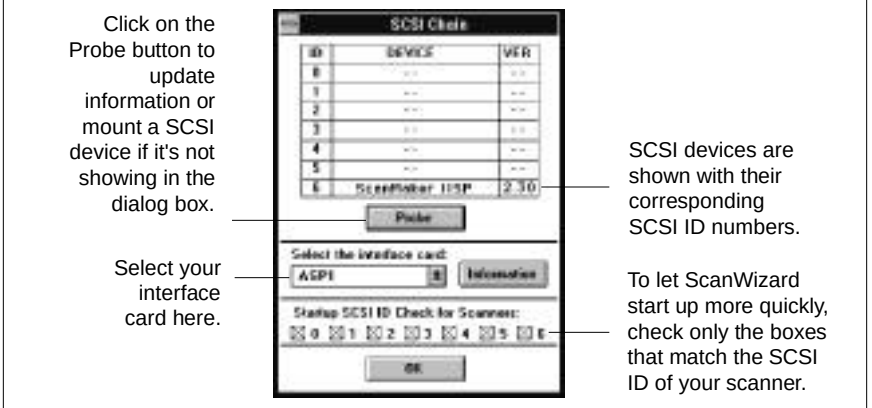



## Get SCSI Chain Info

This command allows you to see the SCSI devices on your SCSI chain and the SCSI ID number of the devices.

By default, all numbers are selected by the check boxes. To allow ScanWizard for Windows to start up more quickly, select only the boxes that match the SCSI ID of your scanner (or scanners, if you have multiple scanners on your system). This will make the ScanWizard bypass the numbers for your other devices and focus effort on simply detecting scanners. If you're not sure about which numbers to specify, check all the boxes.

**The SCSI Chain dialog box**


Click on the Probe button to update information or mount a SCSI device if it's not showing in the dialog box.
Select your interface card here.
SCSI devices are shown with their corresponding SCSI ID numbers.
To let ScanWizard start up more quickly, check only the boxes that match the SCSI ID of your scanner.
SCSI Chain
ID
DEVICE
VER
Probe
Select the interface card:
ASPI
Information
Startup SCSI ID Check for Scanner:
OK

To use the SCSI Chain feature:

1. Choose the *Get SCSI Chain Info* command. The SCSI Chain dialog box will appear.
2. If your scanner does not show, click on the Probe button. Make sure your scanner is connected and turned on.
3. Make sure too that the correct interface card is shown in the card selection box. If not, choose the correct interface card.
4. Check the box corresponding to your scanner or scanners. Click OK to close the dialog box.

## Exiting ScanWizard

To exit ScanWizard for Windows, double click on the close box on the upper left side of the Preview window.

## The View Menu

The View menu lets you:

- Get a full page preview or zoomed-in (enlarged) view of an image
- Resize the preview window
- Show or hide the Settings, Information, and Scan Job windows

### Full Page Preview

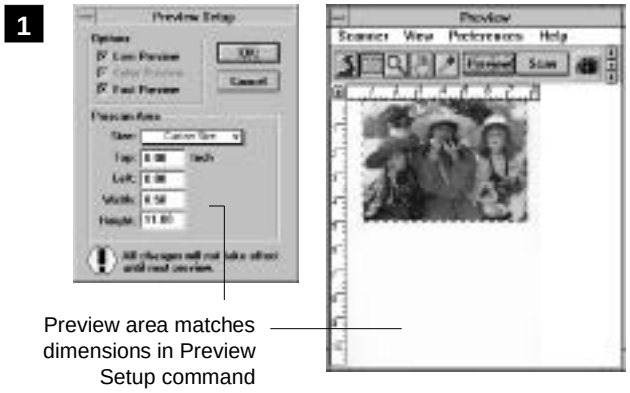
This command shows one of the two viewing modes available for your image (the other being the zoomed preview, explained in the next section).

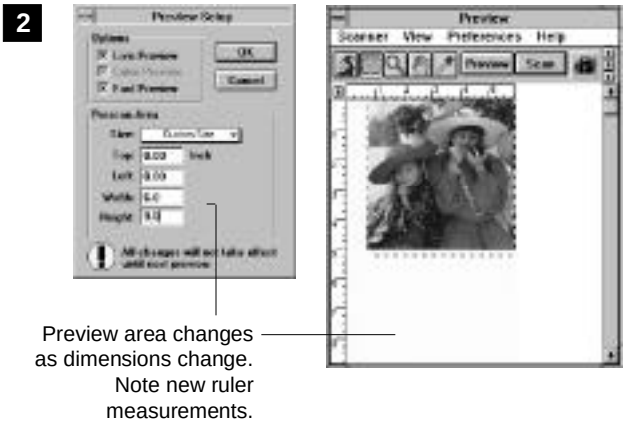
The full page preview is a preview of your image as defined by the parameters set in the Preview Setup command (in the Preferences menu). For instance, if your image is 8" x 5" but the dimensions in the Preview Setup are 4" x 3", your full page preview will be 4" x 3".

The maximum size of the full page preview varies, depending on your scanner model. For example, if the scan bed (the glass surface) of your scanner has a maximum size of 8.5" x 11", the maximum full page preview will be limited to those dimensions.

The size of the full page preview can be changed by setting new dimensions in the *Preview Setup* command. The new dimensions will take effect, however, only with the next preview. This means you need to click on the Preview button so that the scanner does a new preview; only then will you see the new dimensions of the full page preview.

You may wish to change the size of your full page preview to improve performance and save memory. A smaller preview area will occupy less memory, speed up processing, and yield a higher-resolution preview. This is because ScanWizard takes your preview image and dynamically calculates how best to display that image in the smaller preview area — resulting in a higher-resolution view.


1
Preview area matches dimensions in Preview Setup command
Full page preview (8.5" x 11") as determined by dimensions in the Preview Setup


2
Preview area changes as dimensions change. Note new ruler measurements.
Full page preview changes to 6" x 9" because dimensions in Preview Setup were changed

To use full page preview:

1. Full page preview is the default view. It will be dimmed if the current view is already the full page preview. It is available for use only if you are in zoomed preview mode.
2. To change the size of the full page preview, click on the *Preview Setup* command in the Preferences menu. When the Preview Setup dialog box appears, specify the new dimensions for the full page preview. (See the Preview Setup command for more details.)
3. To make the new preview dimensions take effect, do a new preview by clicking on the Preview button. In a few moments, the new preview area will appear.

### Zoomed Preview

This command displays a magnified view of your image when you use the Zoom Preview tool.

The zoomed preview is the view of a specific part of the image shown in higher resolution with more visible detail. If you have zoomed preview enabled, the view is stored in memory, and you can easily switch between full page preview and zoomed preview.

The zoomed preview is different from the zoomed-in view obtained from the Magnifying Lens tool. The zoomed-in view is simply an enlarged view, but it is not in high resolution.

**Full page preview**

**Zoomed preview**

To use zoomed preview:

Click on the zoom preview tool (leftmost tool in the Toolbar that looks like a microscope). Move the pointer to the preview image and draw a scan frame around the area to be zoomed in, then click inside the scan frame. The selected area will be magnified to give you the zoomed preview. For more details, refer to the section on the Zoom Preview tool.

After you use the zoom preview tool to create the zoomed preview, the *Zoomed Preview* option in the View menu will be enabled. You can then switch between Full Page Preview and Zoomed Preview as your viewing modes.

### Resize Window to Fit

This command adjusts the preview window to fit the preview area.

In the example below, the preview window is larger than the preview area, as denoted by the empty space below the vertical ruler. In other instances, the preview window may also exceed the preview area if you manually enlarged the preview window (by dragging on the resize box).

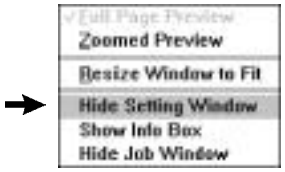
To utilize window space more efficiently, use this command to resize the preview window.

**Before resize**

**After resize**

To use this feature:
Choose the command *Resize window to fit* in the View menu.

This command is available only if the current zoom level is 100%, and is disabled if zoom is set to other levels. To verify the zoom level, open the Information window and look up the zoom level.




## Show / Hide commands

These commands allow you to switch between showing or hiding the Settings, Scan Job, and Information windows on your screen. The commands also have their tool-button counterparts in the form of three arrowheads on the right edge of the toolbar.

To use this feature, do either of the following:

- Choose the correct command from the View menu for viewing a window. When the window appears, you can hide it by choosing the particular *Hide* command for it.

- Click on the Show/Hide tool buttons in the Preview window.

**1** Click on the first arrow to show or hide the Settings window.

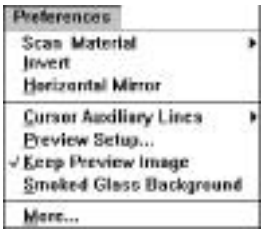
**2** Click on the second arrow to show or hide the Preview window.

**3** Click on the third arrow to show or hide the Info window.

**Note**

Another way to close or hide an active window is to double-click the close box on the left corner of the active window. Do not double-click the close box of the Preview window, however, because this will cause you to exit the program.

## The Preferences Menu




The Preferences menu lets you:

- Choose the correct scan material
- Create effects like invert and mirror
- Create cursor lines to help you with alignment
- Control the size of your preview window
- Keep the preview image even after exiting ScanWizard
- Create a smoked glass background to help distinguish the current scan frame
- Set other options, such as specify a working directory for files

### Scan Material

This command allows you to select the correct scan material. Scan materials can be classified into three types:

- Reflectives, such as photographs or prints.
- Positives, such as slides.
- Negatives, such as the negative film you use for your camera.

The default scan material depends upon the scanner you're using, and the choices available to you in the Scan Material submenu will also depend on your equipment.

For instance, the positive option appears only if you're using a Transparent Media Adapter (TMA) with your scanner. The negative option appears only if you have DCR installed and are using the TMA to scan a negative.

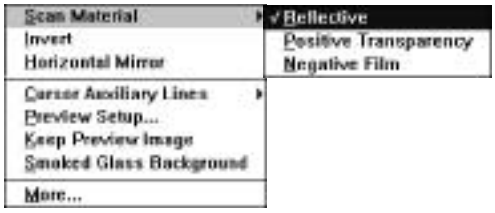
If you are scanning negatives or positives, make sure you specify the correct scan material, or you will get inaccurate scanning results.

**Note**

The Scan Material function is also related to the Tints tool, an image-enhancement function in the Settings window. Refer to that section for more details.

To use the scan material feature:

Choose the *Scan Material* command in the Preferences menu. From the submenu that appears, select your scan material; a check will appear next to the selected option. The selected option will also be shown in the Scan Material Status icon (discussed below).




**Note** If your Preview window is close to the right edge of your monitor, the Scan Material submenu may appear on the left side instead of on the right (as shown above). To resolve this, move the Preview window towards the left to create enough room for the submenu to drop down on the right.

### The Scan Material Status icon

Another way to access the Scan Material menu is to use the Scan Material Status icon, located to the right of the Scan button.

**Scan Material Status icon**

The appearance of the Scan Material Status icon changes, depending on whether your scan material is reflective, positive, or negative.

The positive and negative icons become active only if you're using a Transparent Media Adapter with your flatbed scanner, or if you're using a transparency / slide scanner such as the ScanMaker 45t or ScanMaker 35t.

- If you're scanning a reflective (such as a photo or print), the Scan Material status icon appears in the form shown below. When you click on the icon and hold down the mouse, you'll see the *Reflective* option checked.

Appearance of the Scan Material Status icon when scanning reflective materials.

- If you're scanning a positive transparency or filmstrip, the Scan Material Status icon appears in the form shown below. When you click on the icon and hold down the mouse, you'll see the *Positive Transparency* option checked.

Appearance of the Scan Material Status icon when scanning a positive transparency or filmstrip. Notice the perforations on the top and bottom of the icon (characteristic of slides) to distinguish it from the reflective icon.

- If you're scanning a negative transparency or filmstrip, the Scan Material status icon appears in the form shown below. When you click on the icon and hold down the mouse, you'll see the *Negative Film* option checked.

Appearance of the Scan Material Status icon when scanning a negative transparency or filmstrip.

## Invert

This command creates a negative of an image. The Invert effect is applied to the whole preview image; it cannot be used for only a specific portion of the image.

When an image is inverted, the brightness value of each pixel is converted to the inverse value on the 256-step color values scale. For example, a pixel in a positive image with a value of 255 is changed to 0, and a pixel with a value of 5 is changed to 250.

**Original**

**Invert**

To use this feature:

Choose the *Invert* command in the Preferences menu. A check appears next to the command when it is enabled.

### Horizontal Mirror

This command allows you to flip the image so that a mirror effect is created. The Mirror effect is applied to the whole preview image; it cannot be used for only a specific portion of the image.

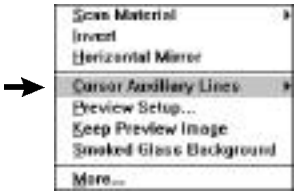
**Original**

**Horizontal Mirror**

To use this feature:

Choose the *Horizontal Mirror* command in the Preferences menu. A check appears next to the command when it is enabled.

When the mirror image appears, the scan frame will still be in the old location, and you will need to move the scan



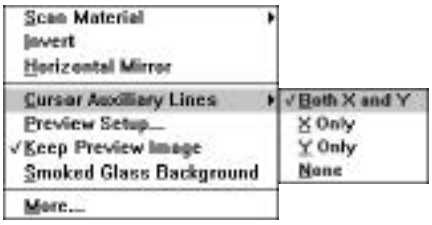

## Cursor Auxiliary Lines

This command allows you to create horizontal and vertical grid lines with your cursor to help define a scan frame precisely. Using the grid lines, you can also read the measurements off your ruler more easily.

To use this feature:

**1** Choose the *Cursor Auxiliary Lines* command in the Preferences menu. From the submenu that appears, select how the cursor lines will appear.

- On both x (horizontal) axis and y (vertical) axis
- On x axis only
- On y axis only
- None (no cursor lines)

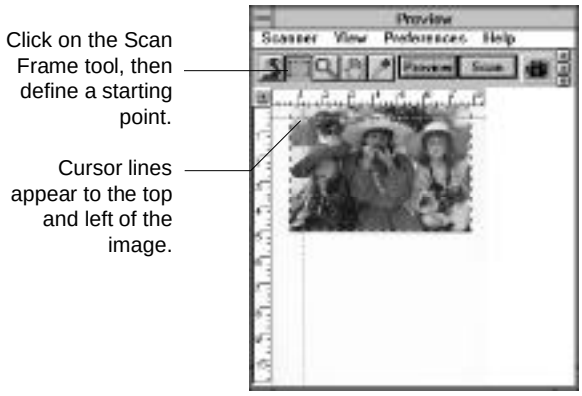


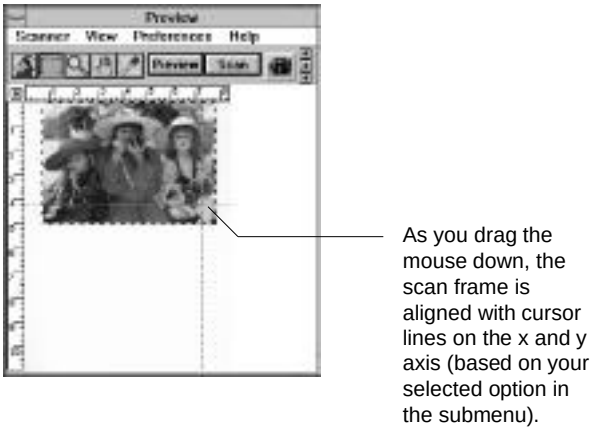

**Note** If your Preview window is close to the right edge of your monitor, the Cursor Auxiliary Lines submenu may appear on the left side instead of on the right (as shown above). To resolve this, move the Preview window towards the left to create enough room for the submenu to drop down on the right.

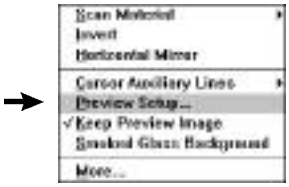
**2** Click on the Scan Frame tool.
To see how the cursor lines work, draw a scan frame. Click on the top left corner of the image as your starting point, then drag down to form a scan frame.

As you draw the scan frame, cursor lines will appear to help you draw the scan frame precisely.

When you release the mouse, your scan frame will be aligned with the cursor lines.


Click on the Scan Frame tool, then define a starting point.
Cursor lines appear to the top and left of the image.
Preview
Scanner View Preferences Help
Preview
Scan


Preview
Scanner View Preferences Help
Preview
Scan
As you drag the mouse down, the scan frame is aligned with cursor lines on the x and y axis (based on your selected option in the submenu).

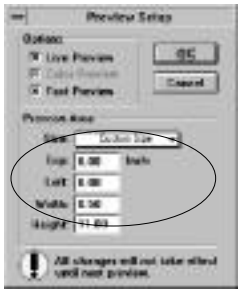



## Preview Setup

This command allows you to set the dimensions of your preview area. When the Preview Setup dialog box (below) comes up, click on the option you need or specify your parameters.

Options described below

| Option | Description of function |
|---|---|
| Live Preview | This option applies only to color scanners. • If Live Preview is enabled, the next option, *Color Preview*, will be dimmed.<br>If Live Preview is on:<br>• Changes you make to the preview image are shown instantly (for example, switching from color to grayscale).<br>• If you're scanning in grayscale and live preview is on, the image appears in color unless you specifically change image type in the Type box (in the Settings window) to a grayscale mode. This happens because Live Preview always does previews in color.<br>If Live Preview is off:<br>Your preview will be in accordance with your image type (i.e., if you have a grayscale image, your preview is in grayscale; with a color image, you get a color preview). If you apply any image-enhancement control, the changes will not be apparent until you do a new preview (click on the Preview button again). Turn off Live Preview if you're previewing or scanning in grayscale to speed up the process. |
| Color Preview | This option applies only to three-pass color scanners, and is enabled only if *Live Preview* is not selected. If this option is turned on, the image will be scanned in whatever scan mode is specified in the Type box (in the Settings window). If it is turned off, the image will be scanned in grayscale. |
| Fast Preview | This option allows you to choose your preview mode.<br>• If Fast Preview is on: The preview is process is faster, but the quality of the preview image is a little coarse.<br>• If Fast Preview is off: The preview process is slower, but the quality of the preview image is improved.<br>The Fast Preview option is a hardware-related feature and may or may not be available depending on your scanner model. |



### The Preview Area

The Preview Area option in the Preview Setup dialog box lets you select the size of your preview area. Choose from the following options: letter, A4, legal, maximum size, or custom size.

- *Maximum* refers to the maximum scan area that can be supported by your particular scanner model.
- *Custom* will appear if you enter your own specifications in any of the edit boxes (Top, Left, Width, Height).
- The *Top*, *Left*, *Width* and *Height* edit boxes allow you to specify the dimensions of the preview area. Top and Left refer to the starting points of the preview area on the x and y coordinates. Width is the expanse of the preview area, and Height is the depth of the preview area.
- The unit of measurement, indicated on the right side of the *Top* box, reflects the unit selected in the Settings window.

Size of preview area if preview setup is 8. 5" x 11"

Size of preview area if preview setup is 6" x 9"

To set the preview area:

1. Choose the Preview Area size. If you enter any of the edit boxes marked Top, Left, Width, or Height, the Preview Area size automatically changes to *Custom.*
2. Click OK to accept the settings; click Cancel to abandon.
3. To make the new preview dimensions take effect, do a new preview by clicking on the Preview button. In a few moments, the new preview area will appear.

### Keep Preview Image

This command allows you to retain the last preview image you used; the preview image is kept in the preview window after you exit ScanWizard.
The next time you start up ScanWizard, this last preview image is again displayed in the preview window.

To use this feature:

Choose the *Keep Preview Image* command in the Preferences menu. A check appears next to the command when it is enabled.

### Smoked Glass Background

This command helps you distinguish the current scan frame from the rest of the material for greater visibility of the current scan frame.

With the Smoked Glass feature turned on, the part of the image within the current scan frame will stand out, while the rest of the image (the "irrelevant" material) is relegated to a background resembling smoked glass. If you have multiple scan frames, only the current scan frame stands out, and the inactive scan frames are hidden behind the smoked glass screen.

The Smoked Glass Background, then, helps you focus on the part of the image within the current scan frame, and is particularly helpful when you are editing a scan frame or applying image-enhancement controls. This way, the changes can be seen more clearly and stand out from the rest of the material. (See the next section for more details. )

Part of image is in another scan frame, but this is not the current scan frame, as the image is dimmed and hidden behind smoked glass background.
Preview
Scanner View Preferences Help
Preview Scan
Current scan frame (with pulsing lines)
Part of image not in any scan frame and also hidden by smoked glass background

To use this feature:

Choose the *Smoked Glass Background* command in the Preferences menu. A check appears next to the command when it is enabled.

### How Smoked Glass works with image enhancement

When the Smoked Glass feature is enabled, it becomes linked with the functions of a scan frame and signficantly impacts the way image-enhancement controls and other settings (such as resolution) are seen. Details follow.

- If you have smoked glass on, a scan frame defined, and set image-enhancement and other controls (such as changing brightness, applying a filter, or changing resolution), the enhancements are applied to **the scan frame alone**.

  This means that the part within the scan frame may change in appearance (as it now has different settings), but because smoked glass is on, the rest of the image hidden behind the smoked glass remains unaffected.

With Smoked Glass on, controls are applied to the part of the image within the scan frame. Notice how right half of image remains behind smoked glass.

- If you have smoked glass off, a scan frame defined, and set image-enhancement and other controls, the enhancements are still applied to the scan frame alone. But because smoked glass is turned off, it appears that the whole image has been altered. This is not the case, as only the scan frame is affected.

With Smoked Glass off, controls are applied to the entire image.

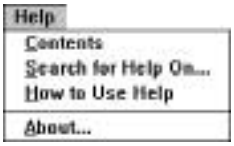
## More

This command allows you to specify a working directory where you can save all temporary and data files, including files for job templates.

To use this feature:

1. Choose the *More* command in the Preferences menu.
2. When the More Preferences dialog box appears, press and hold down the *Working Directory* box. From the pop-up menu that appears, choose your working directory.
3. If you click on the folder icon, the Directory Browser dialog box appears for you to choose your working directory. Click OK to close this dialog box. Whatever directory you specify is automatically added to the pop-up menu (in the More Preferences dialog box) for you to choose from in the future. If the directory you specify is not found or does not exist, a warning message appears, and the current directory of ScanWizard for Windows is used instead.
4. When you have completed your choices, click OK to close the *More Preferences* dialog box. The changes take effect immediately.

## The Help Menu



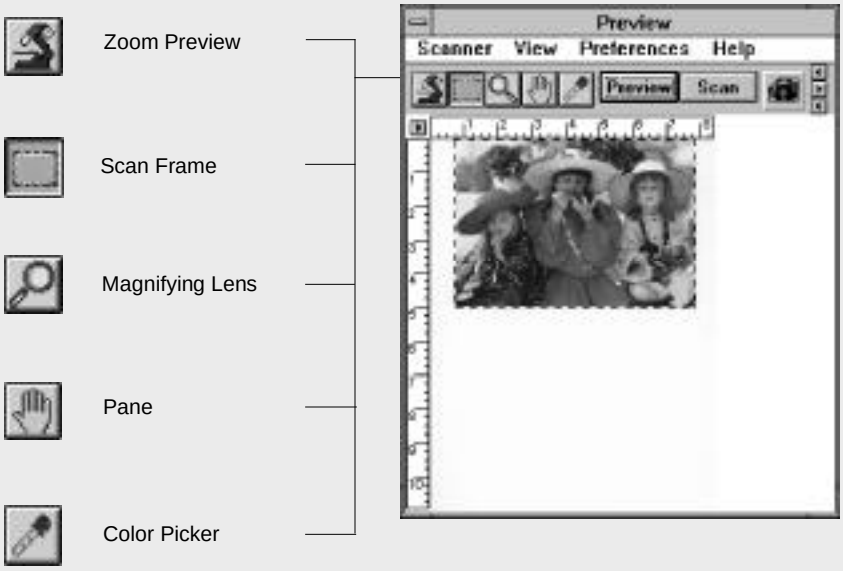

The Help menu lets you access online help for ScanWizard for Windows.

The Help menu uses standard Windows conventions for obtaining online help. If you are not familiar with this procedure, refer to your Microsoft Windows user's guide.

### About

This command gives you information on the ScanWizard for Windows scanning software. ScanWizard for Windows is also referred to in the *About* screen as the ScanWizard scanner controller.

## The Tool Buttons



## Zoom Preview tool

**Usage**

To magnify the view of a preview image in high resolution, and to let you switch between full page preview and zoomed preview.

The Zoom Preview tool gives you the zoomed preview, which is an enlarged, high-resolution view of an image with more visible detail.

The zoomed preview is different from the zoomed-in view, which is not a high-resolution view and is obtained instead by using the magnifying lens tool. By using the zoom preview tool and creating the zoomed preview, you can then switch easily between full page preview and zoomed preview.

Area to be zoomed in with the Zoom Preview tool

**Full page preview**

Selected image part zoomed in (enlarged) in high resolution

**Zoomed preview**

To use the Zoom Preview tool:

1. Click on the Zoom Preview tool.
2. Move the pointer to the preview image and draw a scan frame around the area to be zoomed in.
3. Click inside the scan frame. The selected area will be magnified to give you the zoomed preview. Only the area inside the defined scan frame will be zoomed in. To zoom in on a larger area, go to full page preview and change the size of the scan frame.

## Scan Frame tool

**Usage**

To create a scan frame or multiple scan frames in the preview image.

The Scan Frame tool lets you create or modify a scan frame, which is the active area on which controls and commands can be applied.

The Scan Frame tool can also be used to create multiple scan frames, but only one can be current at a time; the current scan frame is indicated by a marquee (marching ants). The current scan frame can be more easily distinguished if you turn on the *Smoked Glass Background* command (in the Preferences menu).

Current scan frame is denoted by marquee

**Image with single scan frame**

Another scan frame, which can be distinguished by the marquee around the left half of the image.

This is not the current scan frame, however, as the part of the image enclosed by the scan frame is dimmed. Smoked Glass Background is on so that the current scan frames can be seen more easily.

Current scan frame

**Image with multiple scan frames**

To use the Scan Frame tool:

**1** Click on the Scan Frame tool.

**2** Move the pointer (now a crossbar) to the preview image, and draw a frame enclosing the area to be selected. When you release the mouse, the scan frame will be in a marquee.

To make multiple scan frames (which would add scan jobs), hold down the Shift key and drag the mouse. For more information on scan jobs, refer to the *Scan Job* section of the Reference.

**3** To resize the scan frame, do either of the following:
- Move the cursor to any corner of the frame; the pointer will change to a double-headed arrow. Hold down the mouse, and drag to form a new area, then release the mouse; or
- Click on the Scan Frame tool again and restart the area-selection process.

## Magnifying Lens tool

**Usage**
To zoom in or enlarge your view of the preview image.

The Magnifying Lens tool enlarges your view of the preview image, allowing you to set the scan frame with greater precision if you need to. Only your view of the preview image is changed; the actual size of the image remains unaffected.

Each click of the Lens tool magnifies or reduces by a factor of 2. Thus, the magnification levels increase from 100% to 200%, to 400%, and to the maximum 800% (see *Note* below).

If the portion that you want to magnify includes most of the preview area, the lens tool will magnify the view only slightly. To solve this, enlarge the size of the preview area (through the *Preview Setup* command), or create a smaller selection area.

**Note**

If the Information window is open, the zoom level will be indicated.

This means you can also zoom in by selecting the appropriate zoom level in the Information window.

**Original image view**

**Image view enlarged with Magnifying Lens tool**

To use the Magnifying Lens tool:

1. Click on the Magnifying Lens tool.
2. Place the pointer — now a lens with a plus sign inside it — on the image and click. To reduce the view, hold down the Shift key and click again. The plus sign changes to a minus sign when you hold down the Shift key.

## Pane tool

**Usage**

To scroll through an image and move parts of it into view.

The Pane tool lets you scroll through a preview image, allowing you to move parts of the image into view.

The Pane tool can used for zoomed-in images (enlarged through the Magnifying Lens tool), or images not included completely within the frame of the preview window (for instance, if your preview image is 8 inches wide and you resized the width of your preview window to only 5 inches).

Zoomed-in image of three girls

**Zoomed-in image**

Image moved in from the right. Girl on extreme left is now out of the view frame.

**Scrolled image**

To use the Pane tool:

1. Click on the Pane tool.
2. Move the pointer (now a hand) to the image. Hold down the mouse and move the hand left, right, up, or down, and see portions of the image come into view. You can also use the scroll bars to scroll through the image.

## Color Picker tool

(Set Shadow and Highlight)

**Usage**

To sample color from an area and designate new shadow or highlight points.

The Color Picker tool allows you to sample color from an area of an image, and to designate a new shadow or highlight point.

With the Color Picker tool, you can determine the color values for any pixel in an image. When you click on the Color Picker tool and pass over a pixel, the value of that pixel will be displayed in the Information window, based on the sample size also selected in the Information window. Pixel-value information is useful especially when you're making color adjustments based on color values. (For more details, see the section *The Information Window*.)

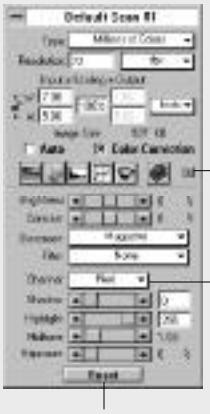
To select a new shadow or highlight point:

**1** Click on the Color Picker tool. Then click on the Window Expansion button in the Settings window to see the bottom half of the window.

**2** Select a color channel in the Channel box.

**3** To select a new shadow point, click on a pixel in the preview image that will serve as the new shadow point.

To select a new highlight point, hold down the Shift key as you click; the Color Picker tool will change and become a white-colored eyedropper.




To restore original settings:

**1** Click on the Window Expansion button in the Settings Window to see the bottom half of the window.

**2** When the expanded window appears, click on the Reset button. When a dialog box appears, choose Shadows and Highlights, then click on *Reset* to close the dialog box.

To change the sample size of the Color Picker:

**1** Open the Information window by choosing the *Show Info Window* command in the View menu.

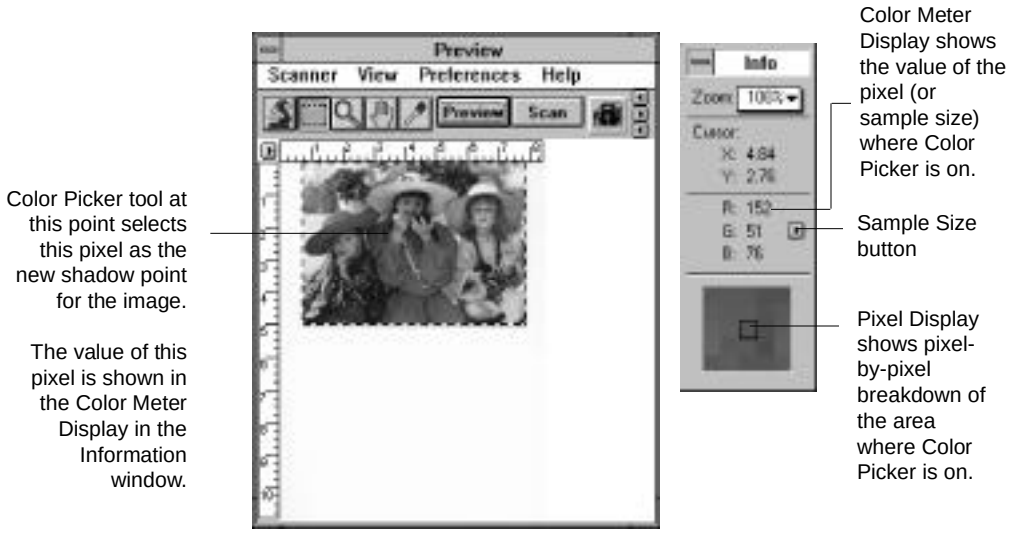
**2** Click on the Sample Size button, located to the right of the RGB values in the Information window.

**3** Choose your options.
- Select *Value* or *Percent* to determine how the pixel information will be displayed.
- Select the sample size. For instance, the 1 by 1 option will display the value of one pixel — the one in the middle of the Color Meter Display. The 3 by 3 option reads the average value of a 3-pixel by 3-pixel area.

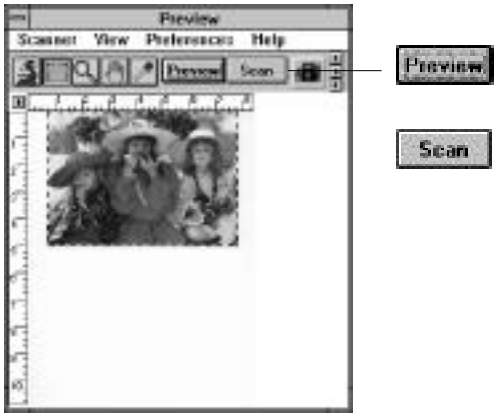
To display color information for a pixel or an averaged area:

**1** Click on the Color Picker tool.

**2** As you pass over a point in the image, see the Information Window — the RGB values will be displayed in the Color Meter Display. These values are in turn based on the sample size you selected (#3 above, second bulleted item).


Color Picker tool at this point selects this pixel as the new shadow point for the image.
The value of this pixel is shown in the Color Meter Display in the Information window.
Preview
Scanner View Preferences Help
Preview Scan
Info
Zoom: 100%
Cursor:
X: 4.84
Y: 2.76
R: 152
G: 51
B: 76
Color Meter Display shows the value of the pixel (or sample size) where Color Picker is on.
Sample Size button
Pixel Display shows pixel-by-pixel breakdown of the area where Color Picker is on.

## Action buttons



The Preview button gives you a preliminary view of the image on your scanner.

Previewing an image gives you greater flexibility, as it allows you to apply various controls to the preview image before actually scanning it in. With the preview image displayed, you can apply image enhancements or crop the image before performing the final scan.

---

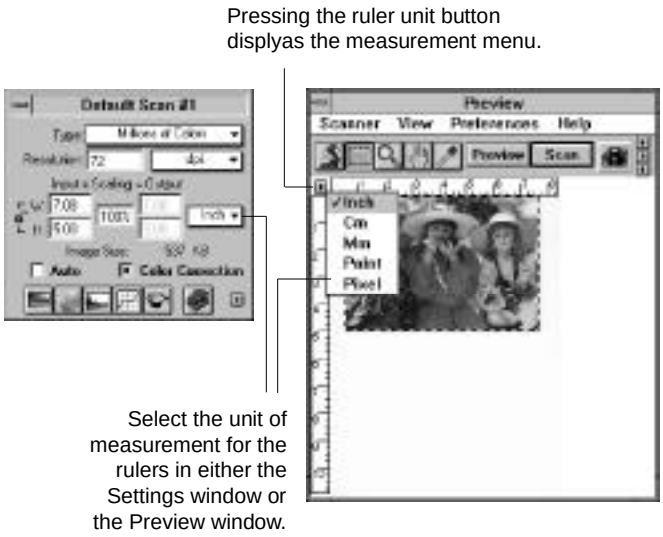
The Scan button lets you scan the image in your scanner and delivers it to your image-editing software. The scanned image is based on the specifications you have chosen in the Settings window and on controls you may have applied to the preview image if a preview was performed.

## Rulers

The rulers on both sides of the preview window help you with operations that need precise measurement and alignment of your image.

The unit of measurement in the rulers is determined by the unit of measurement you have selected. This can be done either in the Image Dimension controls, located in the Settings window, or by clicking on the ruler unit button at the 0,0 point of the rulers in the Preview window.

Depending on your chosen unit of measurement, the rulers can mark off measurement in these units: inch, centimeter, millimeter, point, and pixel. The *pixel* option is dimmed if the selected resolution unit is *lpi*.



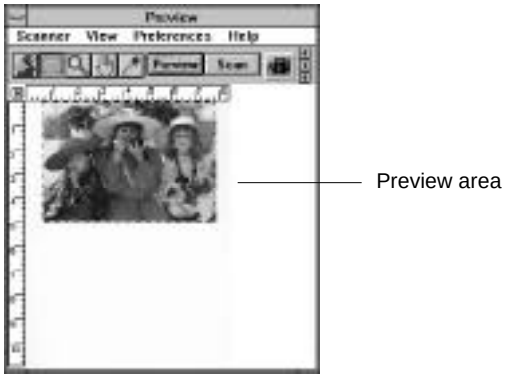

To select the unit of measurement for the rulers:
Click on the unit box in the Settings window, or click on the ruler unit button at the 0,0 point of the rulers in the Preview window. When the submenu appears, select the unit of measurement.

## Preview Area

The preview area is where the preview image appears.

The size of the preview area varies, depending on your scanner model. The size can be changed, however, through the *Preview Setup* command in the Preferences menu. You can increase the size of the preview area to see more detail in your image, or you can reduce the preview area to save on memory.

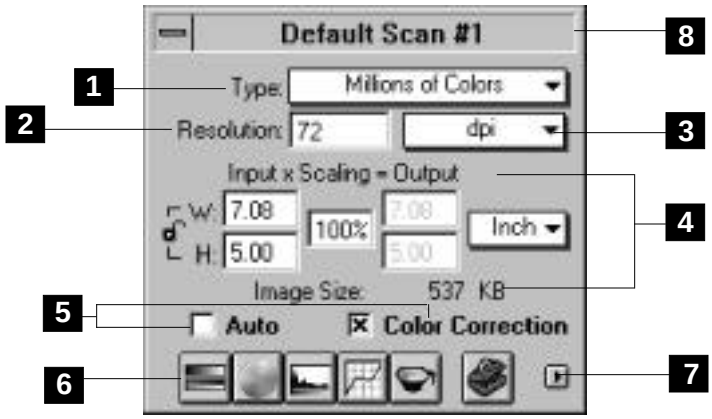
For details on how to change the size of the preview area, refer to the *Preview Setup* command in the Preferences menu section.



## The Settings Window

The Settings window contains the commands for outputting your scanned image and includes the image-enhancement tools of the program.

**Elements of the Settings window**




**1** The **Type menu** lets you select the mode in which your image will be scanned and processed.

**2** The **Resolution edit box** lets you enter a resolution value in which your image will be output (not scanned).

**3** The **Unit Selection** lets you choose the unit of measurement for resolution in either dpi (dots per inch) or lpi (lines per inch).

**4** The **Image Dimension controls** include various parameters for specifying input width and height, scaling, output width and height, and unit of measurement.

**5** The **Image adjustment controls** let you adjust images quickly with the click of a button. These controls are the Auto button and Color Correction button.

**6** The **Image enhancement tools** improve image quality by enhancing image characteristics such as brightness and contrast, shadows and highlights, and others.

**7** The **Window Expansion button** reveals the bottom half of the Settings window, which includes the various image-enhancement controls corresponding to #6.

**8** The **Title area** shows the scan job being processed. (For definition of a scan job, see the scan job section.)

## Output Image Parameters

The Output Image Parameters include the various controls that determine how your image is scanned and processed.

The Output Image Parameters include:
- Type
- Resolution
- Image Dimension controls

### Type (Image Type or Scan Mode)

The Type menu determines what your resulting scan will be. It does not refer to the original image mode. For instance, if you have a color photo but choose 256 grayscale for the scan mode, the photo is scanned and processed as grayscale.

**Note** The options *Billions of colors* and *1000's shades of gray* are available only for 36-bit scanners such as the ScanMaker III. Only a few applications in the market today (such as Photoshop 3.0) support these two options. Do not select these options unless they are supported by your applications; otherwise, you will obtain completely distorted images.

To use the Type menu:

- From the Type menu, select your scan mode. Choose the correct image type, as the wrong choice will simply create bigger files that won't be of any use to you. For instance, if you have a grayscale original, do not set image type to *Millions of colors*.

- If you select *Halftone*, choose the halftone screen as well from the submenu.

**Note**

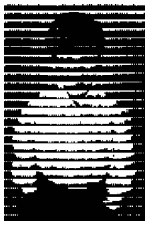
The image you obtain when you choose *Halftone* may not look clear in the preview. To see what it actually looks like, you may need to scan it in.

### Halftone Patterns

The various halftone patterns give you an array of effects for your image. For example, the 53-dot screen works well for most pictures and was designed for printing on a 300-dpi laser printer. The mixed- page pattern is good for displaying images on low-resolution output devices. Other options like horizontal and vertical line provide special effects that add flair to your printouts.

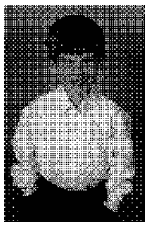
Original
256 gray levels

53-dot screen
53 gray levels



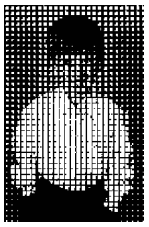
Horizontal screen
65 gray levels

Vertical screen
65 gray levels



Mixed page
33 gray levels

71-dot screen
29 gray levels



60-dot screen #1
26 gray levels

60-dot screen #2
26 gray levels

Fine detail #1
17 gray levels

Fine detail #2
17 gray levels

Slant line
17 gray levels

Posterizing
10 gray levels

High contrast
5 gray levels

## Resolution

Resolution in the Settings window refers to the desired resolution for outputting the image to a device, such as a monitor or printer. It does not refer to the resolution in which the image is scanned. The maximum output resolution is dynamically calculated by the system as determined by the maximum scanner resolution and the scaling setting.

Resolution is also related to scaling, or how large or small the image will be scanned relative to the original. When you change the resolution, the scaling may be affected slightly if the resolution you selected has no exact equivalent in scaling. (Scaling is discussed in the next section, *Image Dimension controls*.)

For details on choosing the optimal resolution and how resolution relates to scaling, see the *Basic Concepts* chapter.

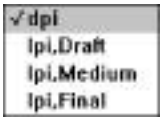
To set your resolution:

Enter a resolution setting in the Resolution edit box. There is no need to press the Enter key; typing in a value automatically inputs it into the system. If the value you enter is too low or too high, the minimum or maximum resolution value is entered for you instead.

**Note** In setting resolution, choose the setting that best matches your output device. Remember that the higher the resolution, the larger the resulting file will be and the longer it will take to output.

### Unit Selection

The unit of measurement for resolution is in dpi (dots per inch) or lpi (lines per inch). Lpi settings are dimmed if the ruler unit is in pixels.




To select your option:

- Choose *dpi* if you know precisely the resolution you need for your image. For more details on resolution, see the *Basic Concepts* chapter.
- Choose *lpi Draft* to produce resolution that is one times the screen frequency. Draft quality may result in output images that look a little blurred or indistinct at edges.
- Choose *lpi Medium* to produce resolution that is one and one-half times the screen frequency.
- Choose *lpi Final* to produce resolution that is two times the screen frequency.

## Image Dimension controls

These controls allow you to adjust the various factors that affect the image, including the width and height of your image when it is first scanned (input), the scaling factor, and the dimensions of the image when it is finally output.

---

**1** This is a mathematical formula expressing the relation of the input dimensions to scaling and how these factors affect image dimensions when the image is scanned.

- Input width and input height refer to the dimensions of the scan frame that you draw. For example, if the image on your scanner is 5" x 7" and you draw a scan frame that is 3" x 4", then your input width will show 3.000 and your input height will show 4.000.
- Output width and output height refer to the dimensions of the image when output to an output device (such as a monitor or printer).

The input width, input height, output width, and output height are affected by your scaling and whether or not the Aspect Lock is on. For more details, see the sections *How to use Input-Output dimensions* and *How to use the Aspect Lock.*

---

**2** The **Aspect Lock** allows you to keep the ratio of the image width and height constant. (For more details, see the section *How to use the Aspect Lock* in the following pages.)

---

**3** The **Scaling control** lets you create large or small images so that the images don't have to be resized subsequently, which is usually done in your image-editing software. For more details, see the *Basic Concepts* chapter and the Scaling section in the following pages.

---

**4** The **Unit of Measurement** allows you to select your unit of measure. The options include inch, centimeter (cm), millimeter (mm), point, and pixel.

---

**5** The **Size** indicates how big the file will be when you accept the dimensions shown in the edit boxes, together with the resolution setting that you selected. Size is calculated automatically.

---

To use the Image Dimension Controls:

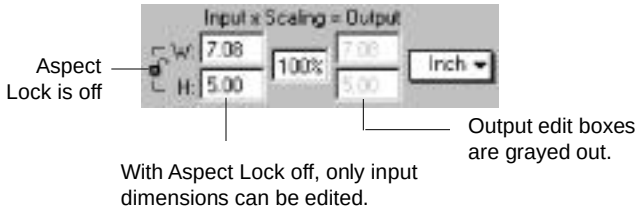
- Select the unit of measurement.
- Enter a value in the applicable edit boxes (width input, height input, scaling, width output, height output).

## How to use the Input-Output dimensions

The Input-Output dimensions consist of four edit boxes: input width, input height, output width, and output height. These edit boxes are linked to the use of the Aspect Lock, and the boxes may or may not be edited depending on whether the Aspect Lock is on or off. Below are the details.

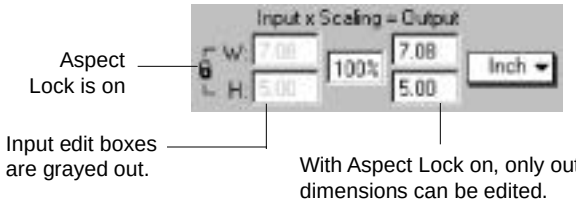
- Use the input dimensions to specify your scan frame; or if you wish, you can simply drag on the scan frame to whatever size you want, and the dimensions will be reflected in the input width and height boxes.

  The input dimensions can be changed only if your Aspect Lock is off, and this is evident because only the input dimensions are active (not grayed out). The output dimensions are grayed out, indicating that they cannot be edited at this point. The output boxes, however, will respond to any changes in the input boxes (and scaling).




- The output dimensions determine the width and height of your image when output to an output device such as a monitor or printer. The output dimensions can be changed only if the Aspect Lock is on.

  The output dimensions are calculated dynamically, and the system looks at other variables such as your resolution and scaling to determine the final output dimensions. This means that you may specify output dimensions of 5" x 7", but because of intervening variables, the actual output dimensions may be 4.85" x 6.9" — which is the closest the system can produce given your other variables.



## How to use the Aspect Lock

The Aspect Lock preserves the ratio of the image width and height from input to output. For instance, if your image is 2 inches wide by 4 inches high, changing it to 1 inch by 2 inches will maintain its aspect ratio. Changing it to, say, 1 inch by 4 inches, however, will alter its aspect ratio, so that the image will be narrower than the original. The notes below provide more details on how to use the Aspect Lock.

The Aspect Lock is a toggle. Click on it to lock or unlock.

---

- If the Aspect Lock is on: Changing one output edit box (width or height) will automatically change the other output field, as well as scaling, to preserve the aspect ratio. With Aspect Lock on, you cannot edit the input dimensions.

Aspect Lock is on

Changing one output field will change the other. Note that aspect ratio is preserved (input 2x4; output 4x8); scaling also changed automatically.

**Important** If you change any of the output fields, you must highlight either the other output field or the scaling edit box for the system to change the other output field. The system will then make the calculations automatically to preserve the aspect ratio.

---

- If the Aspect Lock is off: Changing one input edit box (width or height) will NOT automatically change scaling or the other input field, and aspect ratio can be changed. With Aspect Lock off, you cannot edit the output dimensions.

Aspect Lock is off

Changing one input field will not automatically change the other. Note aspect ratio is not preserved (input changed from 2x4 in previous box to 3x4).

**Important** If you change any of the input fields, press the Enter key so that the output fields respond to the changes (even though they remain grayed out). For example, if you change input width from 2.00 to 3.00, the output width will remain at 2.00 unless you press Enter for the change to take effect.

## Scaling

Scaling is the process of creating larger or smaller images in your scanning software so that you need not resize the images later when they are delivered to your image-editing program.

To illustrate the use of scaling: Assume that your input dimensions are 4" x 5", then:

- If scaling is at 100%, output dimensions will also be 4" x 5".
- If scaling is at 50%, output dimensions will be halved — to 2" x 2.5"
- If scaling is at 200%, output dimensions will be doubled — to 8" x 10".

The above assumes that your resolution is held constant throughout the changes. When you change resolution and specify a value that has no exact equivalent for scaling, the scaling may be affected and adjusts itself to the nearest allowed value. For instance, if your resolution is 100, your scaling becomes 99 (instead of a full 100), because that is the closest scaling equivalent, given the resolution value.

## Image Adjustment controls

The Image Adjustment controls include the Auto button and the Color Correction button, located below the Image Dimension Controls.

### Auto (Automatic Contrast Control)

The Auto button optimizes the contrast of scanned images by making adjustments to the Shadow/Midtone/Highlight values.

The Auto button is dimmed if the image type selected in the *Type* box is line art or halftone.

**How Auto settings are applied**

The Auto setting works by calculating the image settings of the current scan frame and applies those settings to the current scan frame.

If you draw a scan frame around part of an image that is light and then apply Auto, that part of the image within the scan frame becomes darker. This is because Auto takes that dark portion and remaps the pixels to a broader range. The light pixels are then spread further apart, resulting in a darker image.

Conversely, if your scan frame encloses a darker part of the image and then apply Auto, the entire image becomes lighter. The dark pixels are remapped to a broader range, resulting in a lighter image.

When you use Auto, it is helpful to turn on the Smoked Glass Background feature (in the Preferences menu in the Preview window). This will allow you to see clearly the part of the image within the current scan frame.

Selected image part (within scan frame). Auto settings will be based on the settings of this image part.

**Before Auto**

Entire image has darkened with Auto applied, based on settings of the image part within the scan frame.

**After Auto**

To use the Auto control:

1. Click on the Preview button to preview the image.

2. Click on the Scan Frame tool, and draw a scan frame of the area where Auto will be applied.

3. Click on the Auto button in the Settings window. The option will be checked when it is enabled. If you do not like the results obtained by Auto, or if you choose not to use it for certain images that have Auto enabled, click on the Auto button again to deselect the feature.

   Important: Do not use the Auto setting with Color Correction.

**Original**

**Auto applied: Contrast is optimized**

**Note** To see how color images compare with and without the Auto control, see the color pages in this manual.

### Color Correction / DCR

This tool applies a generic color correction profile to your images to give it accurate, lifelike color. However, if you have Microtek's DCR (Dynamic Color Rendition) system installed, the Color Correction button will override the generic color profile and apply DCR to the image.

A generic color profile is provided with the scanning software to correct the minor color shifts that occur invariably with scanners. To achieve optimal color correction, however, you need DCR, a true color calibration and correction system developed expressly for this purpose.

DCR creates an industry-standard color profile matched to your scanner, so that colors in your scanned image are adjusted to their optimal levels. DCR comes standard on certain ScanMaker models and is available as an option on other models. (To obtain DCR, call Microtek Sales at 800-654-4160.)

The Color Correction button is turned on by default, but it can be turned off by clicking on the button again. Color Correction is dimmed in the following instances:

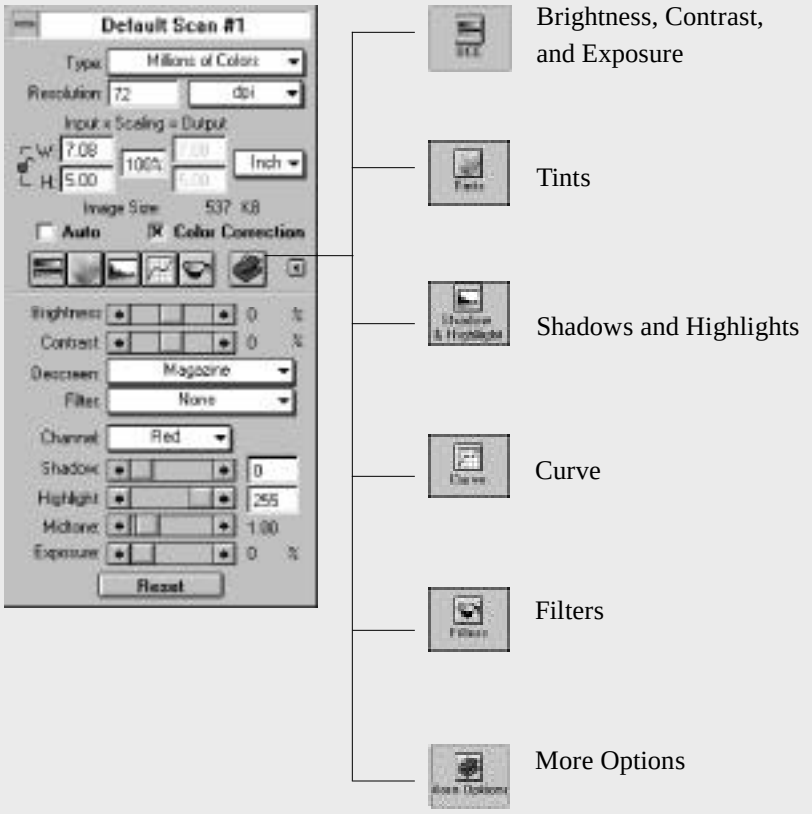
- If image type in the Settings window is set to *billions of colors*, any grayscale setting, line art, or halftone.
- If the scan material type chosen (in the Scan Material command, Preferences menu) is *Negative*.

Important: Do not use the Color Correction button with any other setting, such as gamma or Auto.

Color Correction / DCR is turned on by default

**Note** To see how color images compare with and without Color Correction, see the color pages in this manual.

## Image Enhancement Tools



## What the Image Enhancement Tools are

The image-enhancement tools are an integral part of ScanWizard for Windows. With the image-enhancement tools, you can adjust the characteristics of your image such as brightness and contrast, or shadows and highlights, right from within the ScanWizard. If these tools were not available, image enhancement would have to be done instead in your image-editing software. Thus, the image-enhancement tools in ScanWizard save you time and provide you with the needed flexibility to adjust images right within the scanning software.

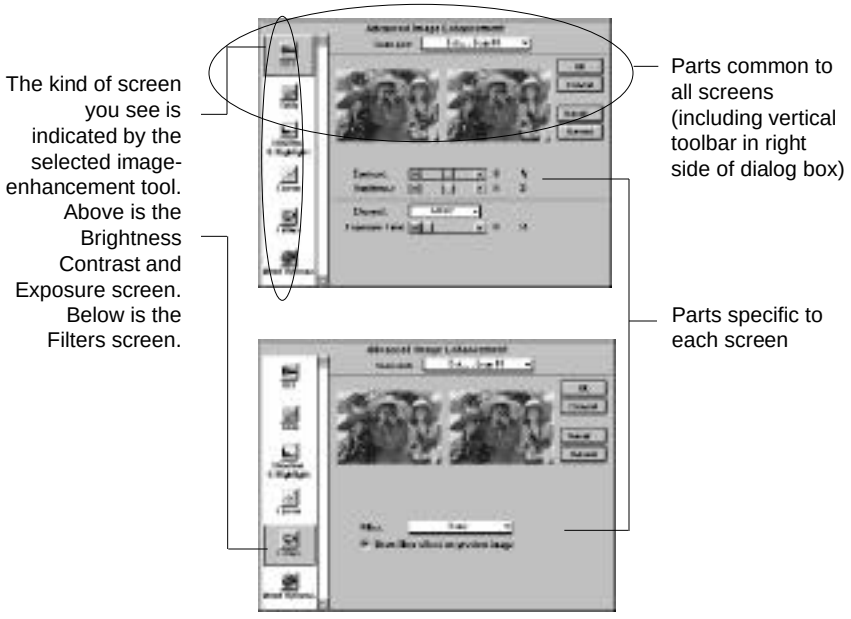
When you click on an image-enhancement tool, a dialog box called the Advanced Image Enhancer (AIE) appears, with a screen corresponding to the image-enhancement tool you selected. Some of the advantages of the AIE dialog box include the following:

- View image enhancement changes in real time. The AIE dialog box has two thumbnails — providing you with "before" and "after versions of an image.
- Switch among image-enhancement tools without leaving the AIE dialog box.
- Switch among scan jobs to apply image enhancement.
- Allow you to reset or revert settings, providing you the flexibility to cancel out changes or restore to default settings if needed.

Although you can use all the image-enhancement tools, you don't need to use every one of them to achieve a great image. Perhaps all that's needed is a change in the shadows or gamma curve. Try experimenting with the tools to see which one provides optimal results.

Take note too that the effects of the image-enhancement tools are cumulative. It's important to remember this because the cumulative effects affect the image in a way that is totally different than if only a single image-enhancement tool was used. Example: If you increase brightness in an image (through the Brightness Contrast and Exposure tool) and then modify the gamma curve of the image (through the Curve tool), the curve will be based on the already altered brightness settings.

**The Advanced Image Enhancer dialog box**


The kind of screen you see is indicated by the selected image-enhancement tool. Above is the Brightness Contrast and Exposure screen. Below is the Filters screen.
Parts common to all screens (including vertical toolbar in right side of dialog box)
Parts specific to each screen

## Using the Advanced Image Enhancer dialog box

When you click on any of the image-enhancement tools in the Settings window, the Advanced Image Enhancer (AIE) dialog box appears. In this box, you can do the following:

**1** This is where you select the scan job to which image enhancement will be applied. (Note: For definition of a scan job, see the Scan Job section of the Reference.) If you have multiple scan jobs, you can switch among the various jobs, and the thumbnails will change accordingly to show the selected scan job.

**Important**

Switching to a new scan job while using the AIE dialog box will make any changes to the currently selected scan job permanent. This cannot be undone even by selecting the Cancel button.

Example: Assume you have two scan jobs, Scan Job 1 and Scan Job 2. If you applied a filter (through the Filters tool) to Scan Job 1, and then switch to Scan Job 2, the filter will be applied to Scan Job 1 even though you did not click OK. To undo the filter, you will need to use the Reset button. See next page on how to use the action buttons for more details.

**2** These are the thumbnails of the image captured by your scanner. The left thumbnail is the "before" version — which shows the effects of the last saved settings values. The right thumbnail is the "after" version — which shows the effects of the new settings added in the AIE.

**3** To select another image-enhancement tool, click on any of the buttons displayed in the vertical toolbar on the right side of the dialog box.

**4** Click on an action button to achieve a particular effect. (See next page for more details.)

3
Click on any button here to use another image-enhancement tool. The dialog box will change accordingly.
Advanced Image Enhancement
1
Choose your scan job here
4
Click on a button for an action
2
Left thumbnail: Before enhancements
Right thumbnail: After enhancements

## The Action Buttons in the AIE dialog box

The Action buttons in the AIE dialog box (item #4 in preceding illustration) carry out a specific action. Below are the details.

**The OK button.**
Clicking on this button will apply whatever image enhancements you have performed on the current scan job, and close the AIE dialog box. Clicking OK is not the same as switching to another scan job (if you have multiple scan jobs). If you switch scan jobs, the effects are applied to your current scan job, and then the new scan job appears; you do not exit the AIE dialog box.

Example: If you increased brightness, changed the saturation, and then clicked OK, all the changes are applied, and you exit the AIE dialog box.

**The Cancel button**
Clicking on this button will cancel out all image-enhancement changes you have made to the current scan job, and then close the AIE dialog box.

Example: If you applied filters, changed the curve, and then clicked Cancel, none of the changes will take effect, and you exit the AIE dialog box.

**The Reset button**
Clicking on this button brings up the Reset dialog box, where you can specify which settings are to be reset, then click Reset or Cancel. If Reset is selected, the settings are restored to their default values; if Cancel is selected, the operation has no effect.

Select the settings to be reset, then click Reset. The selected settings are restored to their default values.

Example: If you changed shadows / highlights, changed brightness, then clicked on Reset and chose to reset brightness, the brightness setting of the scan job is restored to its default; but the altered shadows and highlights remains in effect. If you reset both shadows/ highlights and brightness, then those values are both restored to default.

**The Revert button**
Clicking on this button cancels out the changes you made with the current image-enhancement tool. This means that if you used several tools (and achieved a look that is the cumulative effect of all the tools), using Revert will cancel the effect of only the current tool and preserve the effects of the other preceding tools.

Example: If you changed shadows, applied filters, changed brightness, then clicked Revert, the brightness changes will be cancelled out, but the altered shadows and filters settings remain in effect.

## Brightness Contrast and Exposure tool

**Usage**

To adjust the brightness,contrast and exposure setting of the entire image.

The Brightness, Contrast and Exposure (BCE) tool changes the brightness, contrast, and exposure setting of the entire image.

- Brightness is the balance of light and dark shades in an image,
- Contrast is the range between the darkest and lightest shades in the image.
- Exposure works like the exposure feature in photography, allowing you to change exposure of the image by increasing or reducing available light to the image. The Exposure control is a scanner hardware-related feature, and using it correctly can allow more detail to emerge in an image, especially if it was underexposed.

The goal in using the BCE tool is to get the fullest dynamic range possible for your image. Because the BCE tool affects the image as a whole, you can try using the Shadows and Highlights tool instead to get the effects you want if you find that the BCE tool alters your image too much.

**Original**

**Increase brightness**

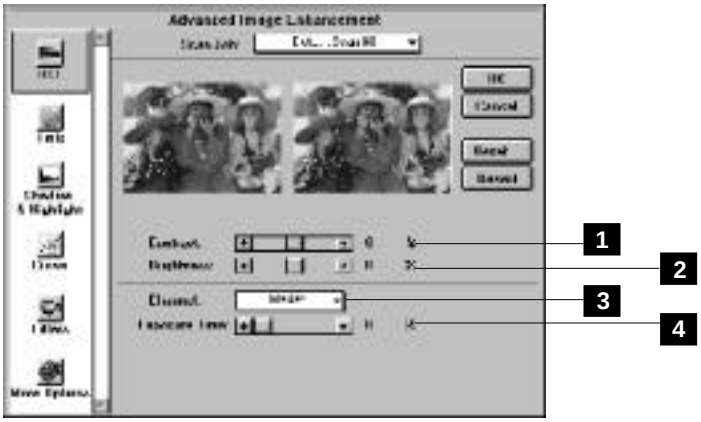
**Reduce brightness**

**Increase contrast**

**Reduce contrast**

For color samples, see color pages

**The BCE screen (for grayscale and color)**




**1** The **Brightness** control lets you change the brightness setting.

- Too much brightness can make an image look washed out.
- Very low brightness levels can make an image look very dark.

**2** The **Contrast** control lets you change the contrast setting.

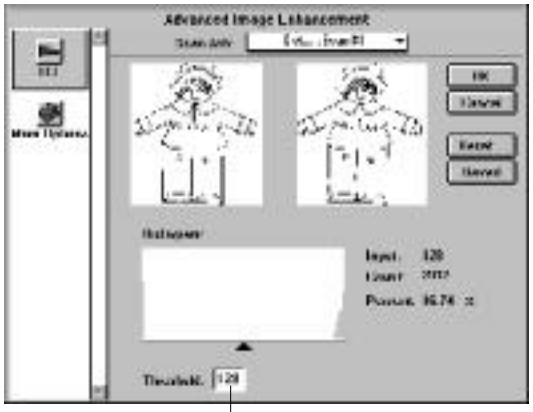
- High contrast can make an image look like a photocopy of a picture with little or no gray shades.
- Low contrast can make an image look dull and flat.

**3** **Channel** lets you change exposure settings for a particular color channel (red, green or blue).

**4** **Exposure** lets you increase or reduce available light to the image. This can be used to allow more detail to emerge in an image, especially if it was underexposed.

- More exposure can result in lighter images with more visible detail. The higher the exposure, the longer it takes to scan the image.
- Less exposure can make an image dark and without detail.

**The BCE screen (for line art)**




In line art mode, the method for determining how gray levels are converted to black and white is through the **Threshold** adjustment control.

The threshold is the dividing line between black and white, with the value 128 (the middle gray level) as the determining point.

- Gray levels below the threshold are converted to black, resulting in a low-contrast, black-and-white representation of the image.
- Gray levels equal to or above the threshold are converted to white, resulting in a high-contrast, black-and-white representation of the image.

To use the Threshold feature, do either of the following:

- Enter a value in the Threshold edit box; or
- Drag the black triangle above the threshold edit box to the right or left. Moving it to the right will increase the threshold value, resulting in a higher-contrast image. Moving it to the left will lower the threshold value, resulting in a lower-contrast image.

## How to use the BCE tool

**1** To change brightness or contrast, choose the Brightness or Contrast control. To change values, drag on the slide bar or click on the arrows on either side of the bar.

**2** To change exposure:

- Click on the Channel box, and select the color channel to be modified.
- Drag on the Exposure slide bar or click on the arrows on either side of the bar.

**3** Click on an action button.

- Click OK to accept changes and exit the AIE dialog box.
- Click Cancel to abandon all changes and exit the AIE dialog box.
- Click Reset to restore settings to original default values.
- Click Revert to cancel the effect of the current image-enhancement tool.

For more details here, see the section *The Action Buttons*.

## Tints tool

**Usage**

To adjust the hue or saturation of an image.

The Tints tool adjusts the hue or saturation of colors.

- Hue is the aspect of color that distinguishes one color from another (whether it is red, green, or blue). In the RGB color model, hue can be distinguished by its position in the color wheel.
- Saturation refers to the intensity of a color (more red in an apple, more green in the grass). Increasing saturation can have a dramatic effect on the colors of an image, but beware of increasing saturation too much, as it creates artificial-looking, overly bright colors.

The Tints tool is useful when your image has a particular color cast and you wish to remove the cast to make the image look more natural.

The Tints tool is also related to the Scan Material command in the Preferences menu. For reflectives or positives, the Tints tool lets you adjust hue and saturation. For negatives, the Tints tool provides additional controls for selecting film type and adjusting exposure.

The Tints tool applies only to color images and is not available for use with grayscale or black-and-white images.

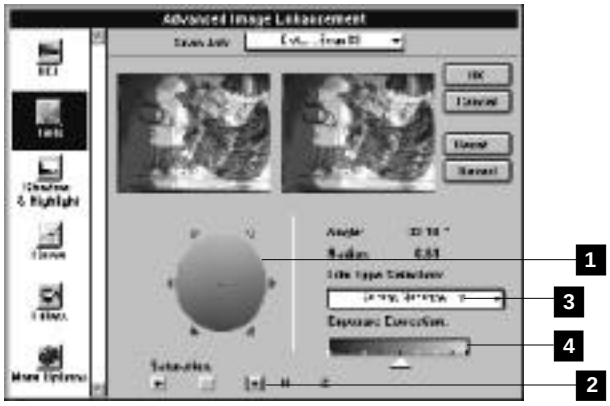
For color samples, see color pages.

To use the Tints tool:

1. Select the correct scan material for your image in the Scan Material command in the Preferences menu. The options available to you will depend on the scanner equipment you're using and certain modules (like DCR) that need to be installed. For more details, refer to the Scan Material section.

2. Click on the Tints tool. When the dialog box comes up, make the adjustments to hue and saturation.

**The Tints screen**




**1** The **Color Wheel** shows you the position of colors — green is across magenta, and red is across cyan. By moving the pointer (a small dot in the center of the wheel) to another place in the color wheel, the hue of the image is altered. For instance, if you move the pointer towards the green area of the wheel, the image will acquire a greenish cast.

**2** The **Saturation bar** lets you change the intensity of the hues (colors) in your image. Use Saturation selectively, because increasing saturation will intensify all hues in the image.

**3, 4** are available only when scan material chosen is *negative*.

**3** The **Film Type Selection bar** allows you to select the type of film you used for your negative. Choosing the correct film type is important in maintaining image quality, and you should choose the film type that's indicated on the packaging that came with your film.

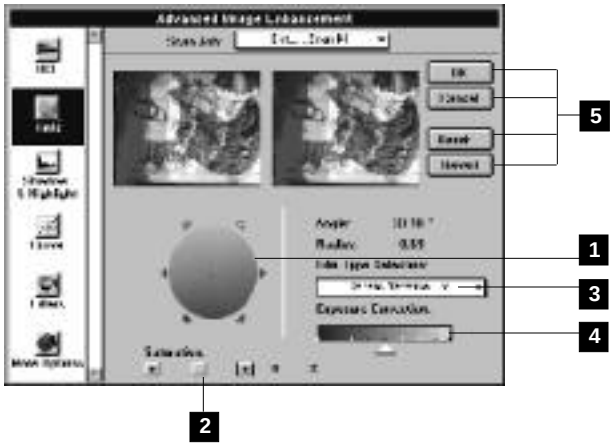
The Film Type Selection box provides several choices for you to choose from. If your type of film is not in the list but a similar film type from the same company is available, you may choose from one of them. Very often, similar films from the same company use identical film types. For example, Kodak 135, ASA 100, ASA 200, and ASA 400 are grouped as the same type — ASA 100.

If your film type is not in the selection list and you cannot find its family group, choose *Generic Negative Film*.

**4** The **Exposure Correction bar** lets you adjust the exposure of a negative. An overexposed negative looks dark (with the image itself in the dialog box appearing bright), while an underexposed negative appears light (with the image itself appearing dark).

- If your film is overexposed (image is too bright), drag the bar to the left; this will make the image darker.
- If your film is underexposed (image is too dark), drag to the bar to the right; this will make the image lighter.

## How to use the Tints tool




**1** To change the hue of an image, move the pointer in the color wheel to its new color position in the wheel.

**2** To change the saturation of an image, drag on the saturation bar. Dragging the slide bar to the left decreases saturation; dragging it to the right increases saturation.

**3, 4** For negatives only:

- To choose the correct film type for your negative, click on the Film Type Selection box and make your selection. If your film type is not in the list, select *Generic Film Type*.
- To correct the exposure of a film, use the Exposure Correction bar. To correct overexposure and make the film darker, drag the triangle to the left. To correct underexposure and make the film lighter, drag the triangle to the right.

**5** Click on an action button.

- Click OK to accept changes and exit the AIE dialog box.
- Click Cancel to abandon all changes and exit the AIE dialog box.
- Click Reset to restore settings to original default values.
- Click Revert to cancel the effect of the current image-enhancement tool.

For more details here, see the section *The Action Buttons*.

## Shadows and Highlights tool

**Usage**

To adjust the shadow and highlight points of an image.

The Shadows and Highlights tool lets you change the shadow and highlight points of an image.

By using this tool, you can manipulate shades so that the Shadow point becomes the new darkest value and the Highlight point becomes the new lightest value. Shades that are darker than the shadow then become black, and shades lighter than the highlight become white. For example, if you set the highlight point to 200, all points in the image with a value greater than 200 will be mapped to a value of 255, since 255 represents the "whitest" white.

The Shadows and Highlights tool can be used for both grayscale and color images. If you have a limited range of grays between your lightest and darkest point, using shadows and highlights will have the effect of extending the range of grays and make more detail in the image visible. This tool is not available for use with line art or halftone scan modes.

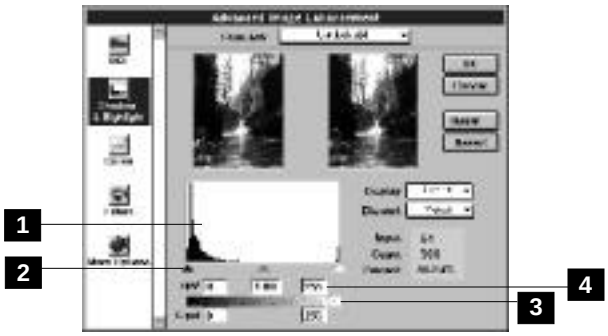
**Original image**

**Emphasize shadows**

**Emphasize highlights**

For color samples, see color pages

## The Shadows and Highlights screen




**1** The **Histogram** is a graphic representation of how all the pixels in an image are distributed across brightness and darkness levels. The darkest pixels are at the left; the lightest pixels are at the right.

- A histogram skewed heavily to the left indicates that the image has many more dark pixels than light.
- Conversely, a histogram skewed heavily to the right will indicate a light image as it has more light pixels than dark.
- The height of the histogram indicates the number of pixels at that point in the histogram.

**2** The **Triangles** (indicators) below the histogram adjust the Shadow, Midtone, and Highlight settings.

- The black (left) triangle controls the shadows. Moving this triangle to the right will emphasize shadows and create a darker image.
- The gray (middle) triangle controls the midtones and indicates how the brightness and darkness pixels are divided. Moving it to a value less than 1.0 will have the effect of darkening the image. Moving it to a value greater than 1.0 will have the effect of lightening the image.
- The white (right) triangle controls the highlights. Moving this triangle to the left will emphasize highlights and create a lighter image.

**Note:** The gray and white triangles will change in color if a color channel (not Master) is selected in the Channel box.

**3** The **Histogram bar** shows the distribution of shades from dark to light (left to right). The distribution of shades changes as you move any of the triangles.

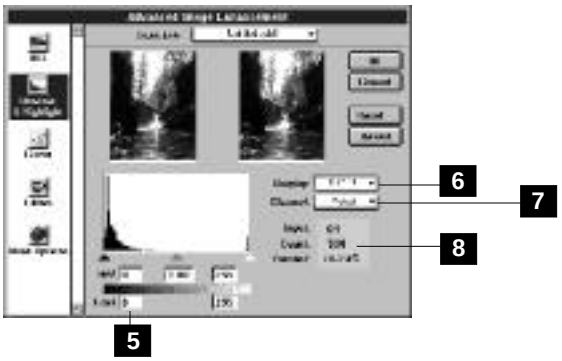
**4** The **Input edit boxes** show how pixels are distributed over the 0-to-255 pixel scale.

The input values are related to the position of the indicators along the histogram. For example, if you move the left triangle in from 0 to 30, the input range becomes 30 to 255, and pixels in the range of 0 to 30 are then set to 0. In a process called mapping, the new range (30 to 255) is stretched back to become 0 to 255. The image then becomes darker, since all pixels from 0 to 30 are now mapped to black (whereas 0 to 30 before had subtle gradations from black that lightened gradually).

The same principle applies when you move in the right triangle, and the highlights in the image become more pronounced.

Moving in any of the triangles above the input boxes will change the values in the boxes. You can observe how the values in the boxes are affected by moving the triangles, or you can enter values into the boxes directly. In both cases, the histogram will change accordingly.

**The Shadows and Highlights screen (cont.)**




**5** **Output edit boxes** show the 0-to-255 pixel range to where the Input levels are mapped. For example, if you modified input values to 30 and 255 and then change output values to 0 to 250, the input values of 30 to 255 will be "stretched" to fit the output range of 0 to 250. This means you have a total of 250 shades (250-0=250).

Unless you have very specific effects in mind, it is better to leave this feature alone, so everything is always mapped to 255 shades (255-0). You can experiment with this feature to see what it does, however, and how it interacts with the input levels.

**6** The **Original / Enhanced** box lets you choose which histogram to see: the original, before the image was modified; or enhanced, after the image had been modified (with shadows and highlights or any other tool).

**7** The **Channel** button lets you control the Shadow and Highlight settings for a particular color channel (red, green or blue) or for the Master channel (red, green, and blue simultaneously).

**8** The **Input / Count / Percent** figures provide information about the histogram. The figures will appear only when the cursor is inside the histogram or if a triangle is being moved.

- Input value indicates the color value of the data displayed in the histogram.
- Count value indicates the number of pixels at the Input value. If Input value is 2 and Count value is 1300, then there are 1300 pixels in the image at the input value of 2.
- Percent value is the percentage of all pixels in the image where color value is less than or equal to the input value. If Percent is 15% and Input value is 2, it means that 15% of all pixels in the image have a value of 2 or less.

### How to read and correct a histogram

A histogram shows how the brightness and darkness levels are distributed in an image. The darkest pixels are at the left, and the lightest pixels are at the right.

An image with good contrast will have a histogram with vertical lines spread across the scale from left to right. Here, the histogram is heavily skewed to the left, where the darkest pixels are, indicating a dark image.

To change the histogram (and thus the image), use the three triangles below the histogram.

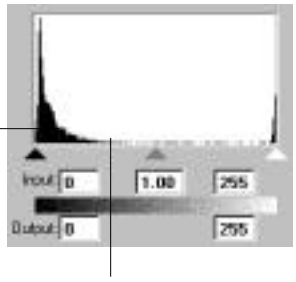
In the original histogram, the pixels are mostly to the left where the black triangle is, indicating a dark image. The range of spread is also broad and flat, with almost no pixels for the midtones and highlights where the gray and white triangles are.

In the corrected image, the triangles have been moved to new locations. The net effect is to narrow the distribution range of the pixels and lighten the image.

Generally, the best thing to do is to move the black and white triangles to the start and end of the curve, and move the gray triangle to somewhere in between.

For example, if your graph starts at about value 20 and ends at 240, move the black triangle to 20 and the white triangle to 240. Then move the gray triangle to somewhere in the middle between the black and white triangle for good overall balance.

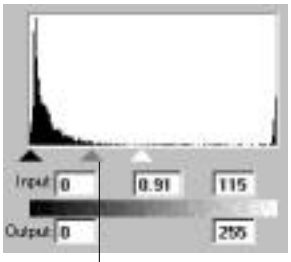
**Original image and histogram**




Pixels are concentrated here, indicating a dark image.

Histogram has a broad and flat spread, with almost all pixels in the shadow range (near the black triangle).

**Corrected image and histogram**

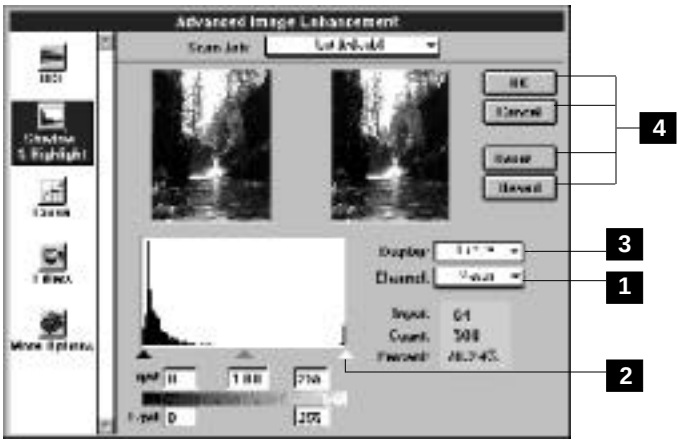



More highlights visible

More detail shows up in shadow areas

Triangles moved to new positions

## How to use the Shadows and Highlights tool




**1** Choose the channel in which the histogram will be modified.

- Select *Master* to modify the histogram in the red, green, and blue color channels simultaneously.
- Select color channels individually (red, green, blue) to modify the histogram in that particular channel.
- For grayscale scanners, only the gray channel is available.

**2** Move the black, gray, and white triangles to change shadows, midtones, and highlights, respectively. The values in the input edit boxes will change accordingly.

- To make the image darker, move in the black triangle to the right.
- To make the image lighter, move in the white triangle to the left.
- To change the midtones, move the gray triangle. If the midtone value is less than 1, the image becomes darker. If the midtone value is greater than 1, the image becomes lighter.

**3** Click on the Display box to view histograms of the original image and the resulting (Enhanced) image.

- Select *Original* to see the histogram before changes were made to the image.
- Select *Enhanced* to see the histogram after changes were made to the image.

**4** Click on an action button.

- Click OK to accept changes and exit the AIE dialog box.
- Click Cancel to abandon all changes and exit the AIE dialog box.
- Click Reset to restore settings to original default values.
- Click Revert to cancel the effect of the current image-enhancement tool.

For more details here, see the section *The Action Buttons*.

## Curve tool

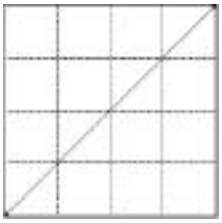
**Usage**

To adjust the midtones, or mid-level grays, of an image.

The Curve tool lets you control the gamma, which measures the intensity affecting the mid-level grays (midtones) of an image. Adjusting the gamma lets you change the values of the middle range of gray tones without dramatically altering the shadows and highlights.

In many ways, the Curve tool gives you the most control for adjusting an image's values, but novice users may take some time to master its intricacies. The Curve tool applies to grayscale and color images and is not available for use with line art or halftone scan modes.

**How to read the curve**



**Original curve: Straight diagonal line**

The curve shows the relationship of the brightness changes across the middle pixels between the resulting image and the original.

When you open the Curves dialog box, the line on the graph is diagonal because the Input and Output values are the same.

The x axis of the graph represents the original brightness values of the pixels, from 0 to 255; the y axis represents the new brightness values. Clicking on the diagonal line then plots a point that can be adjusted.

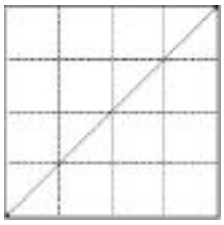
**Modified curve with points moved up**

When the curve is moved up or down, the relationship between input value and output value changes accordingly.

- In areas where the curve is moved down, pixels in that portion of the image are darkened.
- In areas where the curve is moved up, pixels in that portion of the image are lightened.

Contrast in an image can be seen by the angle of the line. The steeper the slope, the higher the contrast. The closer the line is to horizontal, the lower the contrast.

**Sample images and their curves**



Here, the original curve is a straight diagonal, indicating that input and output values are equal.

Here, points along the curve have been moved up, so that pixels are lightened as they are plotted to new points.

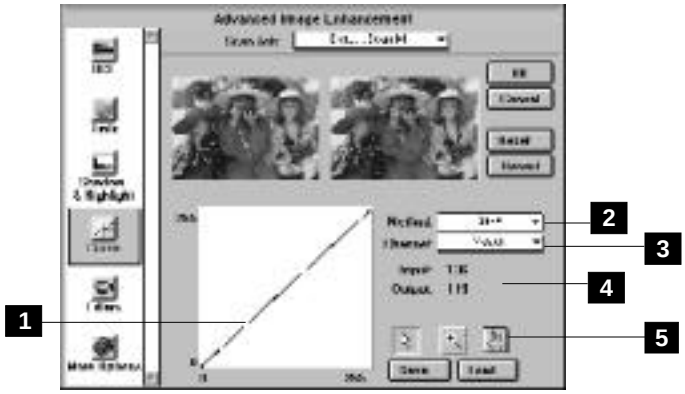
The net effect creates a lighter image.

Here, points along the curve have been moved down, so that pixels are darkened as they are plotted to new points.

The net effect creates a darker image.

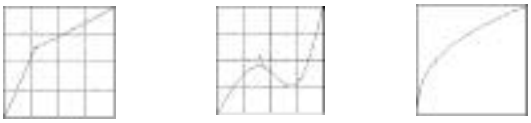
For color samples, see color pages

## The Curve screen




**1** The **Curve** is a graphic representation of the gamma,showing scanner input from dark on the left to light on the right.

**2** The **Method** sets the kind of curve you wish to have. Select from Line, Curve, or Gamma.



Line Curve Gamma

**3** The **Channel** allows you to choose the color or gray channel in which the gamma will be affected.

**4** **Input / Output / Zoom:**

- Input shows the input value of wherever the cursor is pointing on the horizontal axis of the curve. In the example above, the cursor is pointing to the middle of the curve, with a value of 136 on the 0-to-255 pixel scale.
- Output shows the output value of of wherever the cursor is pointing on the vertical axis of the curve. In the example above, the cursor is pointing to the exact middle of the curve, with a value of 119 on the 0-to-255 pixel scale.
- Zoom indicates the magnification level of the curve box. At 100% zoom, the curve is seen in its entirety. Using the zoom frame tool (discussed next) to magnifiy the curve will zoom in or enlarge your view of the curve, resulting in a higher zoom percentage (ex. 200%).

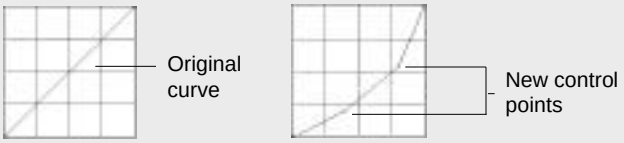
**5** The **Curve Buttons** let you modify the curve. The tools are (left to right) the pointer, zoom frame, and hand.

### Using the Curve buttons

The Curve buttons allow you to modify the curve in the Curve screen.The buttons are the Pointer, Zoom Frame, and Hand.

Pointer

- Use the Pointer button to define points in the curve that will be modified. When you click on any point in the curve, a control point appears to mark your position. To remove a control point, drag it off the graph.



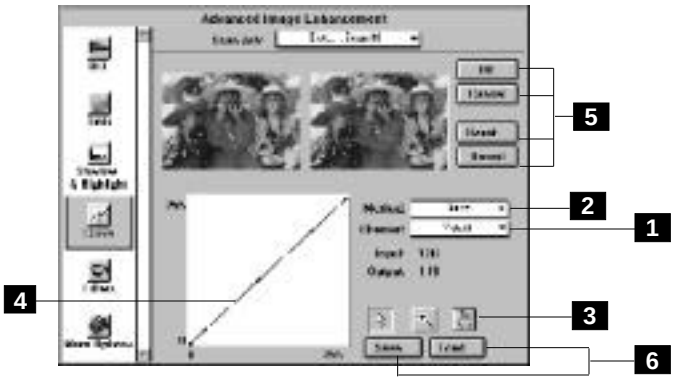
Zoom Frame

- Use the Zoom Frame button to zoom in on a particular point in the curve. Once the area is zoomed in, you can then use the pointer tool to define new points for more precision. This is particularly useful for working with 12-bit images, as more detail can be seen in such images. The zoom level can be seen in the *Zoom* column (item #4 in preceding page). To zoom out, hold down the Shift key and click on the mouse simultaneously.

Hand

- Use the Hand button to scroll through the curve if the curve has been zoomed in. The Hand tool can be used only if the curve has been zoomed in with the Zoom Frame button (above). Otherwise, the Hand tool will be dimmed.

## How to use the Curve tool




**1** Choose the channel in which the curve will be modified.

- Select *Master* to modify gamma in the red, green, and blue color channels of the image simultaneously.
- Select color channels individually (red, green, blue) to modify gamma in that particular color channel.
- For grayscale scanners, only the gray channel is available.

**2** Choose the Method in which the curve will be modified; select from Line, Curve, or Gamma.

There is no difference in the method you select, and the choices are provided to give you more flexibility in adjusting the curve.

**3** Choose a curve button; select from Pointer, Zoom Frame, or Hand. (See previous section *Using a curve button* for more details.)

**4** Click on the curve to define the points where the curve will be modified. You can then either raise or lower the curve at that point and see changes to the image accordingly.

**5** Click on an action button.

- Click OK to accept changes and exit the AIE dialog box.
- Click Cancel to abandon all changes and exit the AIE dialog box.
- Click Reset to restore settings to original default values.
- Click Revert to cancel the effect of the current image-enhancement tool.

For more details here, see the section *The Action Buttons*.

**6** To save a curve, click on the Save button. A dialog box will appear.

- Save the curve in either Microtek or Photoshop format. The Microtek format allows you to have as many as 64 control points in the curve for more precision; Photoshop allows a maximum of 19.
- Choose the Channel. Select *All* if your channel (in #1) is Master; select *Current* if you selected one of the three color channels (red, green or blue).

To use a previously saved gamma curve for another image, click on the Load button, then specify the curve to be loaded. Photoshop-saved curves can also be loaded.

## Filters tool

**Usage**

To create special effects for images.

The Filters tool lets you apply or create special effects to your images. This tool is disabled when your image type is set to *billions of colors, 1,000 shades of gray (grayscale), line art*, and *halftone.*

The filters include Blur, Blur More, Sharpen, Sharpen More, Edge Enhancement, Emboss, and Unsharp Masking.

To use the filters:

**1** Click on the Filters tool in the Settings window. When the Advanced Image Enhancer (AIE) dialog box appears, click on the Filter box, and from the drop-down menu that appears, select the filter to be used.

**Note**

The image you obtain in the preview when you use the Filters tool may differ from the way the image will appear when you scan it in. This depends on your resolution, and the higher the setting, the less obvious certain filters (like Blur) will have.

**2** Click on an action button.

- Click OK to accept changes and exit the AIE dialog box.
- Click Cancel to abandon all changes and exit the AIE dialog box.
- Click Reset to restore settings to original default values.
- Click Revert to cancel the effect of the current image-enhancement tool.

For more details, see the section *The Action Buttons*.

**3** To preview filters and see their effects immediately, click on this box.

For color samples, see color pages

### Blur Filters

The Blur filters eliminate noise in the parts of the image where significant color transitions occur. The Blur filters decrease the contrast between adjacent pixels, making the image appear hazy and out of focus.

- *Blur* smooths out the transitions by lightening pixels next to the hard edges of defined lines and shaded areas.
- *Blur More* produces an effect three or four times stronger than Blur.

**Original**

**Blur**

**Blur More**

### Sharpen Filters

The Sharpen filters do the opposite of the Blur filters and increase the contrast of adjacent pixels, making images appear sharper and more focused.

Both Sharpen and Sharpen More filters improve clarity. The Sharpen More filter has a stronger sharpening effect than the Sharpen filter.

**Original**

**Sharpen**

**Sharpen More**

### Edge Enhancement filter

The Edge Enhancement filter gives greater contrast to edges. The filters can do this because edges are usually areas in an image where gray or color levels change abruptly.

**Original**

**Edge Enhancement**

### Emboss filter

The Emboss filter makes a selection appear raised or stamped by suppressing the color within the selection and then tracing its edges with black.

**Original**

**Emboss**

### Unsharp Masking

The Unsharp Masking filter adjusts the contrast of edge detail and creates the illusion of more image sharpness. This filter can be useful for refocusing an image that has become blurry from interpolation or scanning.

To use Unsharp Masking:

**1** Choose Unsharp Masking from the Filters menu. The Unsharp Mask dialog box appears.

**2** Enter a value in the *Amount* box to specify the percentage of the filter's effect. The higher the percentage, the stronger the effect of the filter.

**3** Enter the *Radius* value in pixels. The radius determines the depth of pixels that will be affected at the edge.
- With a high value, more of the pixels surrounding the edge pixels are sharpened.
- With a low value, only the edges are sharpened.

**4** Enter a value in the *Threshold* box.

This option allows you to specify a tolerance range to prevent overall sharpening that might generate noise or cause other unexpected results.

The Threshold defines the required range of contrast between adjacent pixels before sharpening is applied to an edge. A lower value produces a more pronounced effect.

## More Options tool

**Usage**

For additonal controls in adjusting your scanner and image.

The More Options tool provides you with additional scanner and image controls. These controls include:

- Use Linear Gamma Curve
- Velocity
- Scan Quality
- Gray Scan CCD Filter
- Descreen

To use the controls in the More Options tool: Click on the More Options tool in the Settings window. When the More Options screen appears, select the particular control to be modified and its option, then click OK.

Controls in the More Options screen

### Use Linear Gamma Curve

This option allows the scanning software to read only raw image data, so that no color adjustment (not even the generic color correction profile) is applied to your image when it is scanned.

This control is helpful for professional graphic designers who wish to create very specific effects and are thoroughly familiar with the scanning process. If you are not familiar with this feature, leave this option turned off.

### Velocity

The Velocity command adjusts the speed with which the scanner moves during scanning.

As the scanner processes the image and sends it to the computer, the scanner is also getting more information continuously from the moving scanner mechanism. If the computer cannot store the image data as fast as the scanner sends it, the scanner mechanism has to stop while the scanner waits for the computer to catch up. These brief pauses during scanning sometimes cause the quality of the scan to go down, and images then appear with blurs or lines running across them. It is important, then, to select a slower scanning speed.

Slower scanning speeds give better image quality, but *Auto* is the recommended setting, as it provides the best balance between speed and image quality. If your images appear to have velocity-related problems, try lowering your velocity, and experiment with different settings until you find the fastest velocity at which the images are in good quality and appear to have no lines in them.

To use Velocity:

Click on the More Options tool. When the dialog box comes up, click on the Velocity box and select your scanning speed.

**Important** Sometimes certain scanner models on certain configurations appear to make noise when scanning.

This could be normal and may be related to the speed at which the carriage is moving. Changing the velocity can change the amount of noise or type of sound made by the scanner. The action of prescanning and scanning can also generate different noises, but this is no cause for alarm.

### Scan Quality

This option allows you to select the quality of your scans.

- Choose *Draft* if you're outputting images as drafts. This option speeds up the scanning process, but the image may be a little coarse (compared to the Final option).
- Choose *Final* if you wish to have a scanned image of better quality. This option, however, is slower than Draft.

### Gray Scan CCD Filter

This option allows you to select a particular color channel when scanning grayscale images and is useful for obtaining certain effects.

When scanning grayscale images, one of the color channels of the CCD can be used for scanning; this could be the red, green, or blue color channel.

### Descreen

Descreen allows you to remove moiré patterns in images.

A moiré is an undesirable pattern in printing that results from incorrect screen angles of overprinting halftones. Moirés usually result when you scan images taken directly from a magazine (instead of scanning a continuous glossy photographic original or a transparency).

**Before Descreen**

**After Descreen**

For color samples, see color pages

To use Descreen:

**1** Click on the More Options tool in the Settings window.

**2** When the More Option screen comes up, click on the Descreen box and select your descreen option. The option you select will depend on the dot quality of the original.

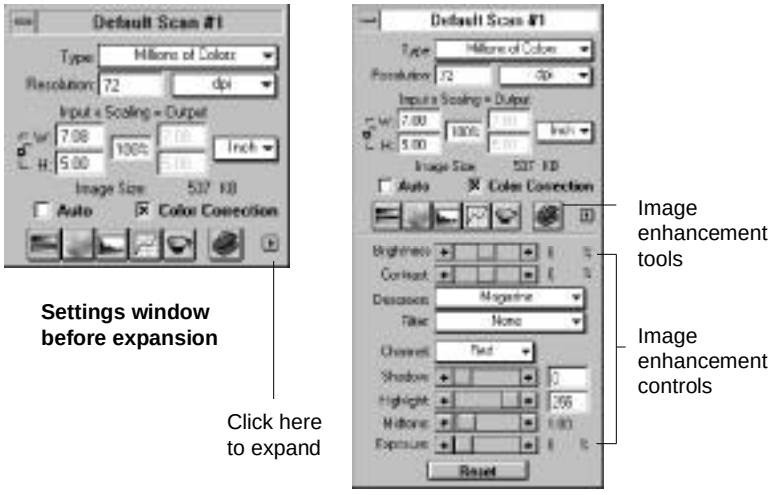
- Choose *Newspaper* if the original image has a coarse dot pattern (like images in a newspaper).
- Choose *Magazine* for images with a finer dot pattern.
- Choose *Art Magazine* for images with near-photographic quality with a very tight dot pattern.
- Choose *Custom* to set your own descreen options.

A check appears next to the descreen option that is enabled.

**Note** Because of the nature of this filter, scans may take longer if you use the Descreen feature.

## The Window Expansion button

The Window Expansion button lets you expand the Settings window to its full size, with the bottom half of the window revealing the image-enhancement controls.




When the bottom half of the Settings window is open, you can use the image-enhancement functions directly by dragging on the slide bars for each control. This is like clicking on the image-enhancement tool, which takes you to the Advanced Image Enhancer (AIE) dialog box where you can change the controls.

Using the slide bars to adjust images may be faster, but using the image-enhancement tools gives you greater control over adjusting images and shows you "before-and-after" images in the AIE dialog box.

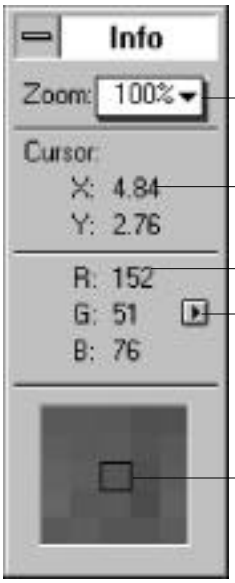
To close the bottom half of the window, click on the Window Expansion button again.

## The Information Window

The Information window provides information on the cursor and the preview image. It also allows you to change zoom levels directly, in much the same way like using the Magnifying Lens tool in the Preview window.

The Information window is a "floating window" and does not appear when you start up the scanning software. To display the information window, click on the *Show Info window* command in the View menu (in the Preview window).

**Elements of the Information window**




1. The **Zoom Level Display** shows the magnification levels possible — from 100% to a maximum 800% view.
2. The **Cursor Locator** shows where the cursor is on the coordinates along the x (horizontal) and y (vertical) axis, based on the unit of measurement selected for the rulers.
3. The **Color Meter Display** indicates the values of the red, green, and blue (RGB) color channels of that part of the image to where the cursor is pointing. The numbers represent the values in the 0-to-255 pixel range.
4. The **Sample Size button** lets you choose how extensively the color information will be read — whether it will apply to a single pixel or an averaged area.
5. The **Pixel Display** shows the pixel and color information of the image part where the cursor is resting.

### Using the Zoom Level Display

The Zoom Level Display magnifies your view of an image, much like the Magnifying Lens tool in the Preview Window.

The magnification factor in both Zoom Level Display and the Magnifying Lens tool is by a factor of 2. Thus, the magnification levels increase from 100% to 200%, to 400%, and to the maximum 800%.

To use the Zoom Level Display:
Click on the Zoom Level box. From the drop-down menu that appears, select your zoom or magnification level.

Click here to display the drop-down menu, and then select your zoom level.

### Using the Cursor Locator

The Cursor Locator shows you where the cursor is on the x (horizontal) and y (vertical) coordinates of the axis. This feature is useful for operations that require very precise measurements and alignment.

### Using the Color Meter Display

The Color Meter Display is useful if you wish to adjust the shadow and highlight points of an image.

As you pass over a point in the image, the Color Meter Display will show the appropriate RGB values of that point in the image. The significance of the numbers is explained below.

- The numbers in the Color Meter Display represent color information taken by the scanner. The values can be anywhere from 0 to 255, with 0 as the black point, 255 as pure white, and all other values in between corresponding to shades from black to white.

- The values as a whole represent color information for the sample size selected in the Sample Size button (discussed below). For instance, if you chose 3 x 3 as your sample size and your R value reads 23, that shows your red value of 23 is the average of a 3-pixel by 3-pixel area.

The numbers in the Color Meter Display represent color information.

The numbers can be from 0 to 255, with 0 as the black point, 255 as white, and all values in between corresponding to shades from black to white.

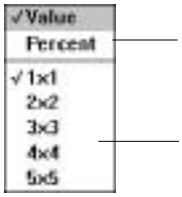
Pixel-value information is useful especially if you are making color corrections based on color values. Knowing this, you can modify the shadow and highlight points of an image, then come back to the same point in the image, and verify through the Color Meter Display that the RGB values have indeed changed.

The Color Meter Display can also be used in conjunction with the Color Picker tool. For more details, see the *Color Picker* topic in the *Preview Window* section of the Reference.

### Using the Sample Size button

The Sample Size button provides options for choosing how extensively the color information will be read — whether the color information will apply to a pixel, a 2-pixel by 2-pixel area, or a wider expanse (maximum 5-pixel by 5-pixel area).

When you click on the Sample Size button, the drop-down menu below appears:



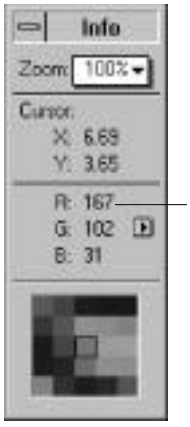

Determines how the numbers in the Color Meter Display are shown — in absolute values or in percentages

Determines the size of the sampling area

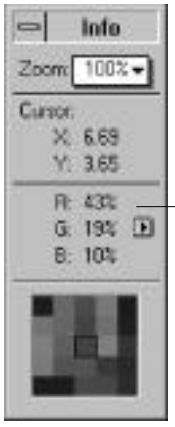
**Value and Percent**

- If you choose Value, the numbers in the Color Meter Display represent the values in the 0-to-255 pixel scale. For instance, an R value of 23 indicates that the sampling size selected has a red color value of 23. Value is calculated by multiplying the percentage by the constant 255 (value = 255 x percent).

- If you choose Percent, the numbers represent the percentage of the maximum intensity of the pixel. For instance, a G value of 35% indicates that the sampling size selected has a green color value to be 35 percent intense (out of 100 percent). Percent is calculated by dividing the constant 255 by the value (percent = 255 ÷ value).



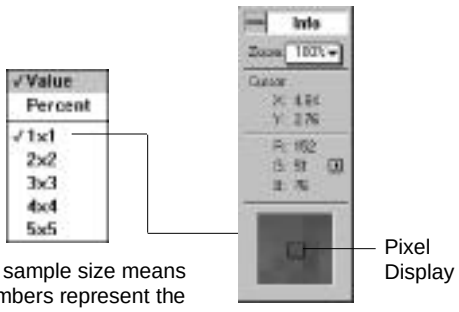

Numbers here are in *Values*



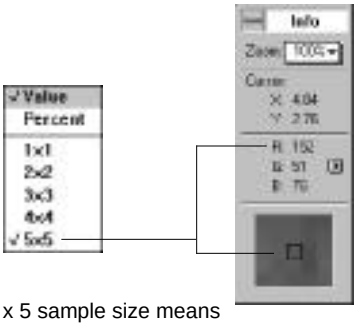

Numbers here are in *Percentages*

**Sample Size Options**

This determines the expanse of color information to be made available. For instance, if you choose 5 x 5 as your sample area, this means your RGB values will represent color information for a 5-pixel by 5-pixel area. If you choose 1 x 1, the color information pertains to a single pixel — the one in the middle of the Pixel Display.




The 1 x 1 sample size means the RGB numbers represent the color value of a single pixel — the one in the middle of the Pixel Display.




The 5 x 5 sample size means the RGB numbers represent the average value of a 5-pixel by 5-pixel area. This would include the whole of the Pixel Display (which is 5 pixels long and 5 pixels wide).

## Using the Pixel Display

The Pixel Display helps you see how color pixels are organized and distributed. The display can then help you make an informed judgment on how best to modify image characteristics such as shadows and highlights, and also allow you to verify any changes that are made.

## The Scan Job Window

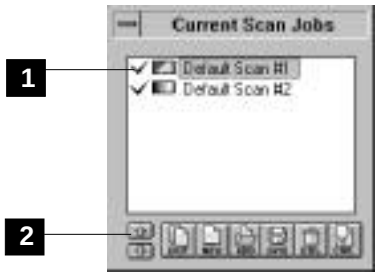
The Scan Job window is an important feature of the scanning software and provides several key functions in processing your scans.

A scan job is simply a task that you designate the scanner to process and scan. For instance, when you first preview an image, the image as a whole has its own parameters (its own brightness and contrast setting, resolution, etc.). The whole image can be treated as one scan job, or you can select a part of the image, apply different parameters to it, and treat that as a separate scan job. Scan job 1 can be in color mode, while scan job 2 can be in grayscale mode.

By making the scan jobs distinct, you can then process each job separately (apply image-enhancement, change settings, etc.) and scan them as separate files into your image-editing software (if the software supports multiple open images).

The number of scan jobs is indicated by the number of titles in the Scan Job window. Scan jobs marked with a check are the ones designated to be scanned, and the jobs are scanned in the order that they appear in the window.

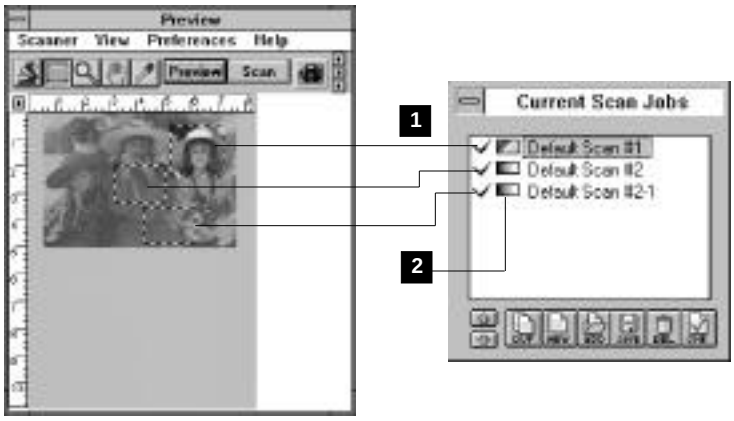
**Elements of the Scan Job window**




**1** The **Title area** shows the number of jobs that have been created. In this example, there are two scan jobs. Check marks indicate which job or jobs are to be scanned; the highlighted title indicates the current scan job. To rename a scan job, highlight the title and type over a new name.

**2** The **function buttons** allow you to create or manipulate the settings for a scan job. These buttons include the Up and Down position arrows; Duplicate button; New button; Add button; Save button; Delete button; and Check button. See next page for more details.

## How to read the Scan Job window




**1** The example above shows three scan jobs.

- The first scan job, entitled *Default Scan #1*, is a color image.
- The second scan job, entitled *Default Scan #2* is a grayscale image.
- The third scan job, entitled *Default Scan #2-1,* is a duplicate that shares the settings of the second scan job (it's also a grayscale image).

The current scan job is the third scan job *(Default Scan #2-1),* as it is highlighted. This is also evident in the Preview window, as the third scan job is the one enclosed by the current scan frame.

All three scan jobs will be scanned, as each is marked with a check. To change the order in which the jobs will be scanned, use the Up and Down position arrows to change the sequence of the titles.

**Note** The *Smoked Glass Background* feature is turned on in the above example to mark clearly the current scan job.

**2** The image-type icon in front of the scan job title shows the scan job type — whether it is color, grayscale, line art, or halftone. A color scan job will have a color image-type icon; a grayscale scan job will have a gray image-type icon; and a line art or halftone scan job will have its corresponding image-type icon.

## The New button

The New button lets you create a new scan job; the new scan job will have default settings. This feature allows you to create as many scan jobs as you wish, and each scan job can then have its own settings. The notes below will illustrate this more clearly.

In the following example, we will use a single image and then divide it into two parts: the left half of the image will comprise one scan job and will be in color; the other half of the image will make up the second scan job and will be in grayscale.

To use the New button:

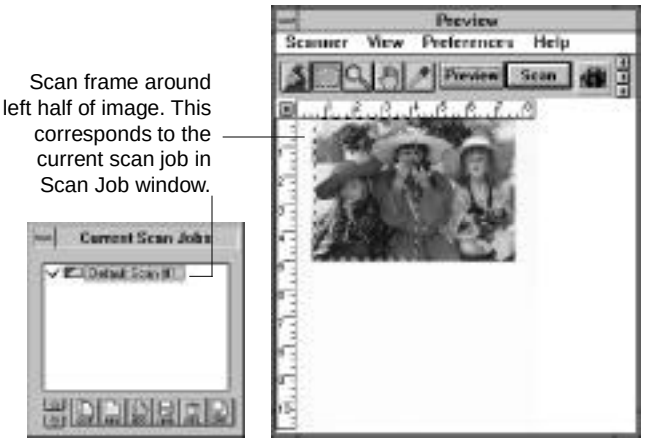
1. Click on the Preview button to see a preliminary view of the image.

2. When the preview image appears, draw a scan frame that covers the left half of the image. At this time, your scan job area shows the title of the current scan job (*Default Scan #1*). Make sure the image type selected (in the Settings window) for this scan job is *Millions of colors.*

**Note**

A scan frame may already be present after you click on the Preview button and the preview image appears.

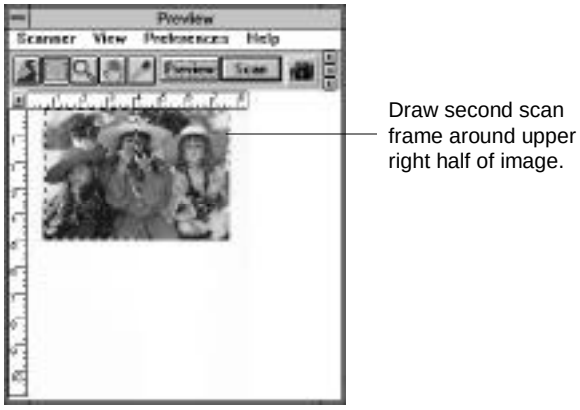
You can then simply grab one of the corners of the scan frame and drag towards the left to form the scan frame described above. If you find this difficult, you can also click on the Scan Frame tool and redraw the frame. Both methods will work.


Scan frame around left half of image. This corresponds to the current scan job in Scan Job window.
Preview
Scanner View Preferences Help
Preview
Scan
Current Scan Jobs

**3** Click on the *New* button in the Scan Job window. When a dialog box comes up, give a title to the new scan job, then click OK. In this example, we will call the new scan job *Default Scan#2.* The Scan Job window will now have two titles. At the same time, a new scan frame appears in the preview window.

New scan frame appears with the addition of a new scan job. Two titles now appear in the Scan Job window.
Preview
Scanner View Preferences Help
Current Scan Jobs

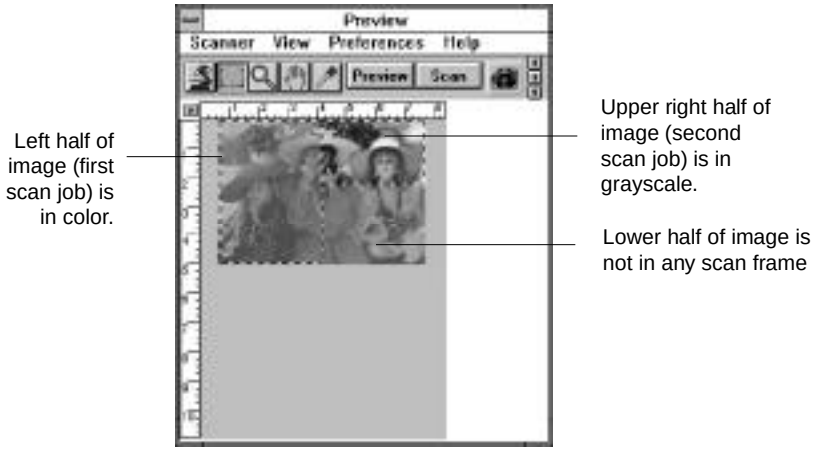
**4** Draw the second scan frame around the right half of the image. In this case, confine the scan frame to the upper right half; leave the lower right half free. The reason why will become apparent in the next step. (For details on drawing the scan frame, see the *Note* that comes after #2.)



**5** With the title bar in the Scan Job window highlighting the second scan job, go to the Settings window, then choose *256 shades of gray* in the Type box. Next, go to the Preferences menu in the Preview window and enable the *Smoked Glass Background* command.

You will now see the following:

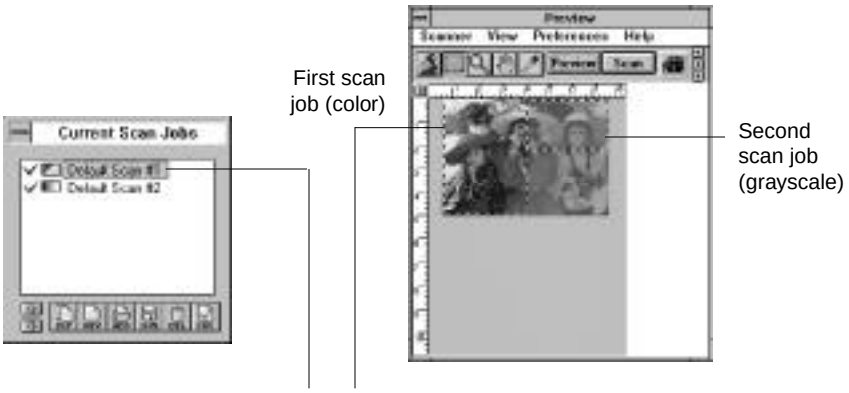
- The second scan job (the upper right half of your image) is in grayscale.
- The first scan job (the left half of the image) remains in color.
- The lower right half of the image (the part not included in any scan frame) is hidden behind the smoked glass background. The smoked glass command is not essential for doing a scan job, but it helps you distinguish scan frames more easily.


Preview
Scanner View Preferences Help
Preview Scan
Left half of image (first scan job) is in color.
Upper right half of image (second scan job) is in grayscale.
Lower half of image is not in any scan frame

**6** To see how the scan jobs relate to the titles in the Scan Job window, try this.

- Click on the first scan job title. The scan job that becomes active will be the left half of the image (in color). In the Scan Job window, the title will be highlighted, indicating that it is the current scan job.

- Click on the second title, and the second scan job is activated (upper right-hand part of image, in gray-scale). The second title will now be highlighted because it will be the current scan job.




Clicking on the first title activates the first image. Clicking on the second title will activate the second image.

**7** To designate the scan job to be processed and scanned, select the scan job and click on the Check button. The checked scan job(s) will then be scanned in the order that they appear in the Scan Job window, and they will be delivered separately to your image-editing software.

Note: To check or uncheck a scan job, select the scan job, then hold down the Shift key and click on the mouse.

### More Applications

The above example shows how to use the New button to create different scan jobs. While the example makes use of creating two scan jobs from a single image, with each scan job being a different image type, you can use the same principle in different applications.

For instance, you can:

- Create two or more scan jobs from a single image. The scan jobs may be the same image type (all color or all grayscale), but each job could have different brightness and contrast settings, resolution, etc.

- Create different scan jobs from multiple images. Instead of one, you can have two or more images and designate each image as a separate scan job. Image 1 could be color, image 2 could be grayscale, and image 3 could be line art. When the three scan jobs are scanned, each is delivered into its own file.

When you have multiple scan jobs and designate all of them for scanning (all scan jobs are checked), each job will be scanned once you activate scanning, and each job is delivered to its own file in your image-editing software.

## The Duplicate button

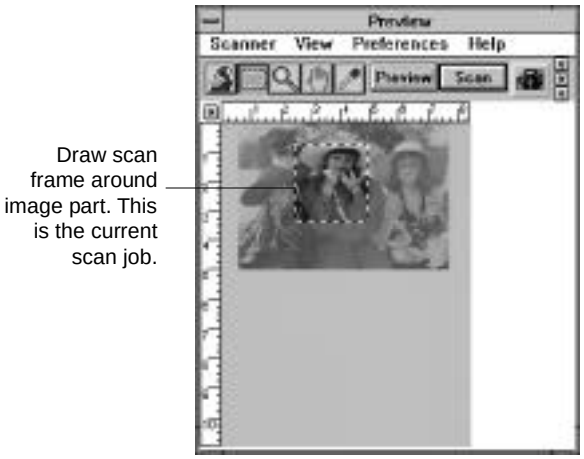
The Duplicate button lets you duplicate the settings of a scan job. This function is especially helpful if you have created optimal settings for a scan job and wish to use these settings as a template for other scan jobs. This saves time, as you don't have to create the settings repeatedly for every scan job you make.

Before using Duplicate, it is helpful to turn on the Smoked Glass Background feature. This will allow you to see clearly the effects of duplication.

To use the Duplicate button:

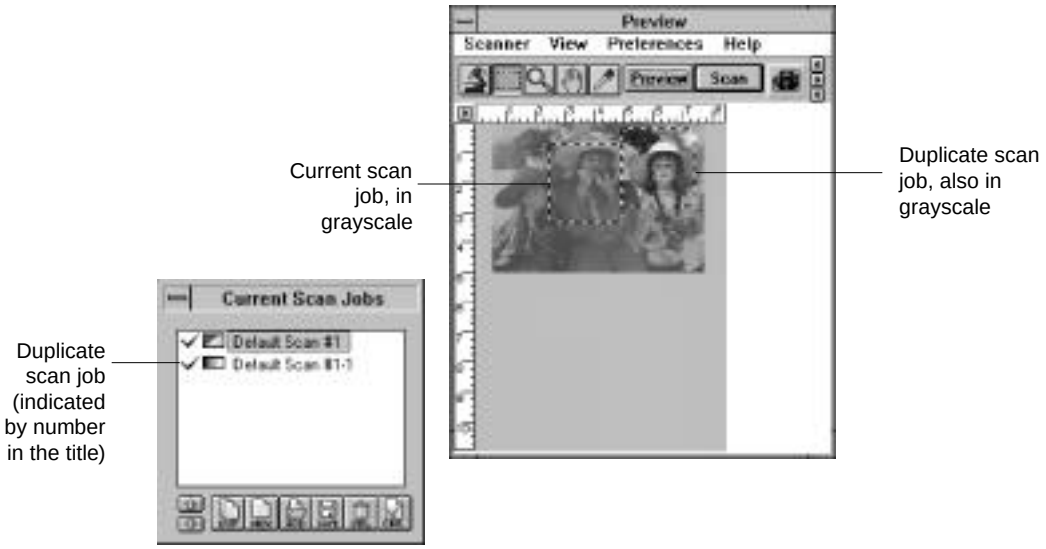
**1** Click on the Preview button to see a preliminary view of the image. To show the principle of duplication clearly, choose image type (in the Settings window) as *Millions of colors*. Also, turn on the Smoked Glass Background feature (in the Preferences menu of the Preview window). Draw a scan frame around a part of an image. This is your current scan job.

**2** Draw a scan frame around a part of the image. This is your current scan job.



**3** To see the effects of duplication clearly in the steps that follow, do this as an experiment. Set the image type of the current scan job to *256 Grayscale*. You will see the current scan job as a grayscale job, while the rest of the image behind the smoked glass background remains in color.

**4** Click on the *Dup* button. Draw another scan frame around a different part of the image; this is your duplicate scan job. You will see that the duplicate scan job will also be in grayscale, as it shares the settings of the current scan job. In the Scan Job window, there will be two titles, and the duplicate scan job is the one with a number to it (ex. *Default Scan #1*).


Preview
Scanner View Preferences Help
Preview Scan
Current scan job, in grayscale
Duplicate scan job, also in grayscale
Current Scan Jobs
Default Scan #1
Default Scan #1-1
Duplicate scan job (indicated by number in the title)

**Shortcut to creating duplicate scan jobs:**
Hold down the Shift key and drag the mouse. A duplicate scan job is created based on the current scan job, and a duplicate title is added in the Scan Job window.

## The Save button

The Save button lets you save the settings in a scan job to a scan job template that can be used for future scan jobs.

To use the Save button:

**1** Click on the *Save* button.

**2** When a dialog box appears, give a name to the scan job template to be saved, then click OK.

## The Add button

The Add button lets you add a scan job from a scan job template saved previously.

To use the Add button:

**1** Click on the *Add* button.

**2** When a dialog box appears, specify the name of the scan job template to be added, then click Add. To close the dialog box, click Close.

## The Check button

The Check button allows you to select the scan jobs to be scanned. When you then click on the Scan button to start scanning, the scan jobs marked by a check are the ones that will be scanned. The Check button is a toggle.

To use the Check button:

**1** In the Title area of the Scan Job window, select the scan job to be scanned.

**2** Click on the *Check* button. A check will appear next to the selected scan job.

**3** To uncheck a selection, select the scan job to be unchecked, and click on the *Check* button again. The scan job will be unchecked, and the scan job will not be scanned when you click on the Scan button.

**Shortcut:**

To check or uncheck a scan job, select the scan job, then hold down the Shift key and click on the mouse.

## The Delete button

The Delete button lets you delete a scan job from the list.

To use the Delete button:

1. In the Title area of the Scan Job window, select the scan job to be deleted.

2. Click on the *Del* button. The scan job is deleted.

## The Up/Down Position Arrows

The Up/Down position arrows allow you to change the sequence in which jobs are scanned through changing the order of the scan jobs in the Title area.

To use the Up/Down position arrows:

1. In the Title area of the Scan Job window, select the scan job to be moved up or down.

2. Click on the Up or Down arrow to change the order of the scan job in the list. When you start scanning, the scan jobs will be processed and scanned in the order that they appear in the Scan Job window (i.e., the first scan job is scanned first; the second scan job is scanned second, etc.).

# Appendix

This section contains important information on product and support policies, troubleshooting, and other scanner-related features. The following subjects are covered:

- Product and Technical Support
- Troubleshooting
- Glossary

# Appendix A Product and Technical Support

In the United States, Microtek is open Monday to Friday, 8 a.m. to 5 p.m. Pacific Standard Time. The AutoTech, fax, and bulletin board lines are open 24 hours a day.

**Main Office**
310-297-5000

**Fax**
310-297-5050

**Sales and Product Information**
800-654-4160

**Bulletin Board Service (BBS)**
310-297-5102

**Technical Support**
310-297-5100
e-mail: support@microtek.com

**AutoTech***
310-297-5101

**Internet:**
http://www.microtekusa.com

**Tech Support Web Pages**
http://www.support.microtek.com

* The AutoTech is a fax-back, 24-hour automated service that lets anyone with access to a fax machine receive information on demand. With AutoTech, you can obtain product literature, software information, basic technical support, troubleshooting tips, and an index of specific topics. To use the AutoTech system, call the number listed above and follow the recorded instructions. Up to 3 documents can be requested in any call. The first time you call, ask for a listing of all documents to be faxed to you first so you can select the appropriate document number from the list.

### Calling Technical Support

If you call Technical Support, please have the following information ready:

- Your scanner model and its serial number. This can be found on the outside of the box in which your scanner was packed and on the back of the scanner, near the SCSI ports. The serial number is usually on a sticker, indicated by the letters "S/N" and followed by an alphanumeric code. Example: S/N:S275700732.
- Your computer name and model, and your system components (external hard drive, CD-ROM, etc.)
- The version number of ScanWizard
- Other software being used with your scanner.

### Returns for Repair

All products to be returned for repair must be accompanied by a Repair Merchandise Authorization (RMA) number. No product will be accepted for return without an RMA number. For more details, call the Auto Tech number and request the document for RMA, or see the hardware chapter of this manual.

# Appendix B Troubleshooting

This section covers some of the more common hardware- and software-related problems you may encounter and the solutions for them. If you have a problem not described in this section, try looking up the *Readme* file or *Click Me* file in your scanning software diskette, which contains up-to-the-minute information on the latest changes.

**1 If the POWER indicator fails to light up.**

Solution: Turn off the scanner. Make sure the scanner’s power is grounded and plugged into an AC outlet. Wait 60 seconds, then turn on the power again. Microtek scanners have a protective mechanism that prevents the scanner from coming on right away after it's just been turned off to increase the life of the power supply.

**2 The scanner's READY light does not come on; you do not have a Transparent Media Adapter.**

Solution: Check the fluorescent lamp inside the scanner and make sure it is continuously and solidly on. Take note of the following:

- If the lamp is on and the scanner still doesn't come ready, the problem may be related to temperature. For example, you may experience problems of this sort if you live in cold weather and the scanner is left in a room all night without the room's heater on. To resolve this situation, leave the scanner on for 30 minutes to warm up, then turn it off and back on after 60 seconds, and see if you get a steady READY light this time.
- If the lamp still doesn't come ready, do one of the following:
  a) If you purchased your scanner within the past 30 days, call your dealer.
  b) If your scanner purchase is more than 30 days old, call the nearest service center or Microtek directly.

If your lamp is on and the READY light is on but the scanner doesn't scan or doesn't seem to work, try testing the scanner to see if it is a scanner-related hardware problem. To do this, disconnect the scanner from the computer, set the SCSI ID to #7, and turn it on. The scanner will scan continuously. If it does not, there is a hardware problem. Contact your dealer and tell them the situation.

**3 The scanner's READY light does not come on; you have a Transparent Media Adapter attached.**

Solution: Disconnect the Transparent Media Adapter (TMA) and see if the scanner comes ready this time. If not, see the solution outlined in situation #2.If the scanner comes ready on its own but doesn't come ready if attached to the TMA, you may have a problem with the gray template that comes with the TMA, or you may have a problem with the external power supply. To resolve this situation, check the following:

- Make sure you have attached an external power supply (included with the TMA if needed) if your scanner model requires one. The power supply is needed for the TMA to function.
- Make sure the TMA model matches your scanner (check the outside of the TMA box to verify this). If you have the wrong or mismatched TMA model, call your dealer and exchange it for the correct one.
- Next, install the TMA (and the power supply if it has one), and close the TMA top. Make sure that nothing is placed inside the scanner on the glass surface, and then turn the scanner on. You should now get a ready light.

If your lamp is on and the READY light is on but the scanner doesn't scan or doesn't seem to work, try testing the scanner to see if it is a scanner-related hardware problem. To do this, disconnect the scanner from the computer, set the SCSI ID to #7, and turn it on. The scanner will scan continuously. If it does not, there is a hardware problem. Contact your dealer and tell them the situation.

**4 When issuing a *Scan* command, the software locks up after the scanner seems to start scanning (makes "noises"); or you get an error message.**

If you have the Transparent Media Adapter, make sure the TMA is installed properly (see situation #3 for more details). In addition, make sure you observe the following:

- Place the gray template that comes with the TMA on the glass surface of the scanner, with the clear opening of the template towards the front of the scanner.
- Place the transparency to be scanned inside the template, and close the cover.
- In the scanning software, select either *Positive* or *Negative* from the Scan Material command in the Preferences menu (depending on whether you're scanning a positive or negative transparency); do not use the *Reflective* option.
- After complying with the above, click on Scan or Preview.

**5 When you scan an 8-1/2-inch wide image, the left or right side of the image is cut off.**

Solution: This may happen if you are using a ScanMaker III scanner, which has a maximum scanning width of 8.3 inches. Therefore, a small margin on each side which will be cut off when you scan.

**6 While scanning images, the scanner carriage (lamp) keeps going back and forth or idles, resulting in very long scan times.**

Solution: This is called backtracking. Microtek scanners have a feature that allows for recovery from image defects that result from the carriage scanning and stopping during the scan. The carriage usually goes back and reads part of the image once, then goes back a second time to patch the images together and create a smooth picture. On some machines, due to low amount of memory or a large virtual memory size, the software forces the scanner to stop and start too many times, causing backtracking (which may happen on almost every scan line). To resolve this, you can:

- Increase RAM in the computer by purchasing more memory.
- For Windows 3.1 x users: Reduce or turn off virtual memory in the Windows 386 Enhanced module inside the Main group.
- If using the OmniPage software, turn off the *Auto Intensity* feature under the *Options* menu.

**7 Your scanned images do not have the same color as the original.**

Solution: Generally, scanners, monitors, and printers all see and output color differently. In order to come close to the original colors, you need to calibrate all three devices. Microtek's DCR color correction system ensures that your scanner captures colors accurately, but to have these colors output correctly to a monitor or printer, you need a color management system such as Kodak's Color Management Software. These third-party color management systems ensure color integrity throughout the color production process from input to output. Usually, all scanners scan a little darker or lighter than the original (for instance, a scanner may scan red as magenta). This is not a fault of the scanner but is a situation inherent to calibration of the equipment.

**8 Scanned images have vertical white lines from top to bottom.**

Solution: The mirrors of your scanner may be dusty or dirty. To resolve this, open the cover and spray some air on the bottom mirror which is roughly 8-1/2" long and is directly below the carriage (but moves with the carriage). Do not clean the mirrors with glass cleaners such as Windex or with cloth. If you want to use a liquid, use alcohol and lens tissue paper (other materials may scratch).

**9 Color images are washed out with little detail in the light or highlight areas.**

Solution: Sometimes on certain images that are light, enabling the Color Correction option or the Auto button (both in the Settings window) might make the images very light and thus cause certain areas to wash out. To resolve this, you may want to turn off these options. Also, if you are scanning very light highlight areas and they're coming out white, try reducing the exposure control (through the Brightness, Contrast and Exposure tool) to a negative number.

**10 The options *billions of colors* and *1000s of shades of gray* are grayed out.**

Solution: These two options are available only with the ScanMaker III. The option *billions of colors* is a mode in which you scan 67.8 billion colors, and this requires a 36-bit scanner like the ScanMaker III. The option *1000s of shades of gray* is 12-bit (equivalent to 4,096 shades of gray) and is also available only through a 12-bit-per channel scanner like the ScanMaker III. These options can be used only if your application supports them (Photoshop does; others may not).

**11 This message appears: "Not enough disk space."**

Solution: You may get this error message if you try to scan an image larger than the space available in your hard disk. Keep in mind that when scanning into Adobe Photoshop, you need hard disk space that's 2 to 2-1/2 times the file size of the image. In addition, Windows virtual memory takes up a substantial amount of disk space to emulate memory or RAM, resulting in reduced disk space for your program and scanned images. Another situation in which this message may appear is when you use the descreen function. With the descreen option selected (under the Filters tool in the Settings window), you need a hard disk space that's 8 times that of the image's file size. For example, to scan a 5-megabyte color image with descreen, you need 40 megabytes (5 x 8) of available disk space. If you turn off descreen, you will need a hard disk space that's 2.5 times that of the image's file size (12.5 MB, or 2.5 x 8).

**12 When you preview or scan, the scanner will not move, but an image appears in the software as if the scanner was working.**

Solution: This problem may be due to the scanner selection under the Scanner pull-down menu in the Preview window. If you select *ScanMaker Demo*, the program will go through all the motions of scanning an image, but it will use a sample image file instead of the scanner as the source. To fix this problem, select your scanner model from the Scanner menu. This will change the source from the sample image file to the scanner. If no scanner model appears in the Scanner menu, you may have a communication problem with your scanner. See troubleshooting tip #13.

**13 When you select Acquire, the Microtek scanner software reports that no scanner is connected, or the Scan and Preview buttons are grayed out.**

Solution: This problem usually happens when the software cannot see the scanner. This situation could be resolved by any of the following:

- Make sure the scanner has a solid green light on and that the lamp inside is continuously and solidly on (no flickering). If not, see troubleshooting for situation #2.
- Make sure the scanner is connected properly to the computer. If you have multiple SCSI devices connected to your computer, try the computer with only the scanner connected to see if the two work. If they do, the problem is with another SCSI device, with the cabling, or with the terminator. Make sure none of your cables are too long (4 feet or shorter), and make sure the last SCSI device on your system is externally terminated with a terminator.
- Set the Windows display option to VGA or super VGA, then restart Windows and try again. The problem may be a conflict with the video driver.
- For Windows 3.1x users: Turn off 32-bit addressing in the 386 Enhanced module of the Main group, then restart Windows and try again.
- Make sure the SCSI ID setting on your scanner is unique, and that no other SCSI device has the same setting as your scanner. Microtek scanners are set to SCSI ID #6 by default. If you have a utility that can scan your SCSI bus (such as the ScanWizard's SCSI Check feature), you can easily find out what ID numbers are taken and which ones are free to be used for the scanner.
- You may also want to try to scan using the Scanner Test utility to see if the problem is in your image-editing software or due to other conflicts between the software and another program in your computer. If the test utility works, then your scanner is operating properly, and you should look for other utilities and programs that may be causing the problem.

**14 Color images seem to have a pattern on them when scanned.**

Solution: Check the following:

- Make sure that your display option in your Windows setup is set to *16.7 million colors*.
- If you scan an image that came from a magazine or brochure, you will get an artifact on the image called a moiré. Moiré patterns show up when you scan an image that has been printed already. To reduce the patterns, select the *More Options* tool in the Settings window, and then select the *Descreen* filter. In the Descreen filter are options for newspaper, magazine, and art magazine. For more details, refer to the *Reference* section in the manual.

**15 Problems with the Transparent Media Adapter (TMA).**

Solution: If you have a ScanMaker III scanner, make sure the TMA cable is connected on the back of the ScanMaker III scanner and that the screws are very tight. Otherwise, it is possible that the TMA may not work.

**16 The Color Correction button is grayed out and you cannot select it.**

Solution: This button turns gray when the DCR or Dynamic Color Rendition files are missing from the Windows/Twain/Microtek/DCR directory. To fix this problem, run the calibrator program and calibrate your scanner, or reinstall the ScanWizard so that the default profiles are copied onto your system. A new set of profiles will then be generated.

# Appendix C Glossary

Cross-referenced entries are indicated in **bold type**.

**Bit**

The smallest unit of memory in the computer. A bit can be either off or on, representing a value of 0 or 1. Greater bit-depth translates to more complexity in image information. Some examples:

Single-bit

Single-bit images use just one bit of data to record each **pixel** — either black or white.

8-bit grayscale

Images that contain 256 ($2^8$=256) possible shades of gray needed to represent most black-and-white photos accurately. 256 levels of gray is actually more shades of gray than the human eye can see.

24-bit color

24-bit color images are composed of three 8-bit color channels. When combined, the red, green and blue channels provide up to 16.7 million possible combinations (hence, colors). 24-bit color is also known as True Color and photo-realistic color.

36-bit color

36-bit color images are composed of three 12-bit color channels. When combined, the red, green and blue channels provide up to 68.7 billion possible combinations that translate into that many "colors." (This compares to 16.7 million colors for 24-bit scanners.) The extra amount of information that can be processed by 36-bit scanners translates to more vivid color reproduction, as the scanner is able to accommodate more subtle gradations of color approaching lifelike accuracy.

**Auto Document Feeder (ADF)**

A scanner accessory that helps with text scanning. The ADF allows continuous scanning of up to 50 pages of text. This accessory is normally used with an **OCR** (Optical Character Recognition) software program, not an image-editing program like Adobe Photoshop or Microtek ImageStar II.

**Brightness**

The balance of light and dark shades in an image. Brightness is distinct from **contrast**, which measures the range between the darkest and lightest shades in an image. Brightness determines the intensity of shades; contrast determines the number of shades you get.

**Color calibration**

The process of ensuring accurate reproduction of color for images. Full color calibration is usually a two-step process: calibrating your input device, such as a scanner; and calibrating your output device, such as a printer or monitor. By calibrating input and output devices correctly, color is accurately captured by your scanner and is reproduced faithfully on your monitor or printer as well.

**CCD**

Stands for charge-coupled device, a strip of light-sensitive cells that converts light waves reflected from an image during scanning into digital information.

**Color channel**

Refers to the red, green, and blue components from which colors are created.

**Color image**

An image type that contains the most complex information (compared to single-bit and grayscale images). To capture color images, scanners use a process based on the **RGB** color model.

**Contrast**

The relationship between the light and dark areas of an image. Contrast is the range between the darkest and lightest shades in an image, while **brightness** is the balance of light and dark shades. Contrast determines the number of shades you get; brightness determines the intensity of the shades. An image with low contrast tends to look dull and flat.

**DCR**

Stands for Dynamic Color Rendition, Microtek's exclusive color calibration technology. DCR ensures that reproduced colors in your scanned image match those of the original as closely as possible. DCR comes standard on the ScanMaker III and is available as an option for all other color scanners.

**Dpi**

Stands for dots per inch, the measure of **resolution**. The greater the dpi number, the higher the resolution.

### Dynamic range

The ability of a scanner to register a wide range of tonal values — something from near white to near black. A scanner with good dynamic range is able to map input shades correctly to output shades, making images look brighter and with more visible detail. Generally, the number of bits determines the maximum dynamic range of a scanner. For example, a 36-bit scanner has a higher dynamic range than a 24-bit scanner.

### Exposure

The amount of light in an image. The exposure of an image can be changed by increasing or reducing available light.

### File format

The way a graphic file is saved. Several file formats are available for use, and each one has its own advantages and disadvantages. The most popular file formats include TIFF, PICT, EPS, and PCX. TIFF is the most widely used file format.

### Filters

Tools that allow you to apply or create special effects to your images. Filters in your scanning software include Blur/Blur More, Sharpen/ Sharpen More, Edge Enhancement, Emboss, and Unsharp Mask

### Gamma

The contrast affecting the mid-level grays or midtones of an image. Adjusting the gamma of an image allows you to change brightness values of the middle range of gray tones without dramatically altering the **shadows** and **highlights**.

### Grayscale

An image type that contains more than just black and white, and includes actual shades of gray. In a grayscale image, each **pixel** has more bits of information encoded in it, allowing more shades to be recorded and shown. 4 **bits** are needed to reproduce up to 16 levels of gray, and 8 bits can reproduce a photo-realistic 256 shades of gray.

### Halftone

A type of **single-bit image** composed of a pattern of black dots that fool the eye into seeing shades of gray. Examples of halftone images are the pictures you see in a newspaper. These images usually look very coarse.

### Highlights

The lightest portions of an image.

**Histogram**

A graphic representation of how brightness and darkness pixels are distributed in an image. A histogram skewed heavily to the left indicates a dark image, while a histogram skewed to the right indicates a light image.

**Hue**

The aspect of color that distinguishes it from another color (what makes a color red or green or blue). Hue is distinct from **saturation**, which measures the intensity of the hue (more red, more green).

**Image-editing software**

Software that is used to edit images, such as Adobe Photoshop.

**Image enhancement tools**

Tools in your scanning software for adjusting the color and quality of images. These tools include Brightness, Contrast and Exposure; Shadows and Highlights; Tints; Curve; Filters; and More Options.

**Image Type**

The way you wish an image to be scanned and processed. ScanWizard lets you reproduce an image as **halftone**, **line art**, **grayscale**, or **color**.

**Imagesetter**

An output device used to render high-resolution images or documents on photographic paper or film.

**Interpolated resolution**

Resolution enhanced through software; thus also known as software-enhanced resolution. For instance, if your **optical resolution** is 300 **dpi**, you may be able to enhance images up to 600 dpi through software interpolation. Interpolated resolution may capture less detail than the optical, but it is useful for certain tasks, such as scanning **line art** or enlarging small originals.

**Line art**

A type of **single-bit image** that is just purely black and white, such as a pencil or ink sketch. Line art may also include one-color images, such as mechanical blueprints or drawings.

### Lpi (lines per inch)

The resolution of printed images. Lpi is distinct from **dpi**, which measures the resolution of electronic images.

### Midtones

The parts of an image between the lighter and darker areas, at around 50% gray.

### Moiré

An undesirable pattern in color printing that results from incorrect screen angles of overprinting **halftones**. Moirés usually result when you scan a halftone or when you scan images taken directly from a magazine (instead of scanning a photographic original or a transparency).

### OCR

Stands for Optical Character Recognition, the process of scanning an image and converting the image into text format.

### Optical resolution

The true resolution of a scanner and is the key factor in determining the amount of detail visible in an image. Optical resolution is one type of resolution; the other is **interpolated resolution**.

### Pixel

A unit used by the computer to describe picture elements and to represent image information in a digital format. An image file, for instance, is simply a representation of hundreds (or thousands) of pixels arranged in a grid.

### Printing methods

The type of printing method you choose should be tailored according to your scanned image. For instance, low-resolution black-and-white printers are good for producing text and **line art**, but they are not suitable for **grayscale**. For grayscale, use higher-resolution printers such as the ones capable of producing 600 to 1200 **dpi**. To print **color images**, you can choose from ink jet/desk jet color printers, dye-sublimation printers, or printing presses.

### Resolution

The level of detail in an image, expressed in dots per inch or **dpi**. The greater the dpi number, the higher the resolution and the resulting file size. There are two types of resolution: **optical resolution**, and **interpolated resolution**.

**RGB**

The color model in which every color is composed of a varying amount of the three colors of red, green, and blue.

**Saturation**

The intensity of a color, or the amount of color in a specific **hue**. For instance, the image of a bright red apple will appear to be "more red" if the colors are saturated.

**Scaling**

The process of creating larger or smaller images in ScanWizard, so that the images don't have to be resized later when they are delivered to the image-editing program. Scaling has an inverse relation to **resolution**: The lower the resolution, the larger the image can be scaled. At the highest resolution, images can only be scaled smaller.

**Scan material**

The type of material for your image. Scan materials can be generally classified into three types: reflectives, such as photographs or prints; positives, such as slides; and negatives, like the negative film used in cameras.

**Scanner**

A device that captures an image for your computer and converts it to a digital form that your computer can display, edit, store and output. A scanner can be used for a wide variety of applications, such as incorporating artwork or photos into documents, scanning printed text into your word processor to eliminate retyping, scanning faxed documents into a database for storage, and adding images to multimedia productions.

**SCSI**

Stands for Small Computer System Interface, a format for interfacing hardware to the Macintosh.

**SCSI chain**

A chain that links SCSI devices on your system. A SCSI chain may include such devices as a scanner, a CD-ROM drive, an external hard drive, and a tape drive. Each SCSI device on the chain must have its own SCSI ID number, or conflict will ensue.

### Shadows

The darkest areas of an image.

### Single-bit image

Single-bit images are the simplest kind of image, using just one **bit** of data to record each pixel. Single-bit images come in two types: **line art**, and **halftone**.

### Text scanning

One of the most common uses for scanners, as it eliminates the need for retyping. Scanners scan text through the use of **OCR software** and deliver text to your word processor.

### Terminator

A special resistor pack or a block of resistors that tells the computer where the end of the SCSI chain is and ensures the electrical integrity of the bus signals. Terminators act as a filter to clear out electrical "noise" caused by multiple cables and devices.

### Transparent Media Adapter (TMA)

A scanner accessory used for scanning transparencies, slides and filmstrips. The TMA has a unique lighting device that prevents transparent originals from being exposed to too much light and getting washed out as a result.

### TWAIN

A software industry standard that allows software applications and hardware imaging devices to communicate directly. ScanWizard is a TWAIN-compliant program, which means it can be used with other TWAIN-compliant applications like Adobe Photoshop. In practical terms, this means that when a scan is performed through ScanWizard, the scan is automatically placed inside Photoshop.

### Zoom

The ability to magnify the view of an image in the preview window.

# Specifications for Flatbed Scanners (PC)

**Media:**
Reflective color or black-and-white originals

**Image Sensor:**
- ScanMaker V600, V310, and V300: Linear array CCD with cold cathode lamp.
- ScanMaker E3 Plus: Linear array CCD with daylight fluorescent lamp.

**Scanning Modes:**
- ScanMaker V600, E3 Plus, and V310:
  Single scanning pass; 30-bit color internal process (24-bit color external process); 10-bit grayscale internal process (8-bit grayscale external process); 1-bit black and white; 12 built-in halftones.
- ScanMaker V300: Single scanning pass; 24-bit color; 8-bit grayscale; 1-bit black and white; 12 built-in halftones.

**Scan Frame:**
- ScanMaker V600, V310, and V300: 8.5" x 11.69"
- ScanMaker E3 Plus: 8.5" x 13.5"

**Optical Resolution:**
- ScanMaker V600:
  600 dpi horiz. x 1200 dpi vert.
- ScanMaker E3 Plus, V310, and V300:
  300 dpi horiz. x 600 dpi vert.

**Interpolated Resolution:**
- ScanMaker V600:
  9600 dpi horiz. x 9600 dpi vert.
- ScanMaker E3 Plus, V310, and V300:
  4800 dpi horiz. x 4800 dpi vert.

**Scan Frame Selections:**
- ScanMaker V600, V310, and V300:
  From 1/8" to 11.69" in 2-pixel increments
- ScanMaker E3 Plus, V310, and V300:
  From 1/8" to 13.5" in 2-pixel increments

**Image Controls Brightness Settings:**
From -100% to +100% in 1% increments.

**Contrast Settings:**
From -42% to +49% in 7% increments.

**Exposure Time Selections:**
From -18% to +747% in 3% increments.

**Resolution Settings:**
- ScanMaker V600:
  From 6 dpi to 600 dpi in 6-dpi increments; 600 dpi to 1200 dpi in 12-dpi increments; 1200 dpi to 2400 dpi in 24-dpi increments; 2400 dpi to 4800 dpi in 48-dpi increments; 4800 dpi to 9600 dpi in 96-dpi increments.
- ScanMaker E3 Plus, V300, and V310:
  From 3 dpi to 300 dpi in 1% increments; 300 dpi to 600 dpi in 2% increments; 600 dpi to 1200 dpi in 4% increments; 1200 dpi to 2400 dpi in 8% increments; 2400 dpi to 4800 dpi in 16% increments.

**Scanning Speed:**
- ScanMaker V600: 4.5 milliseconds per line for line art, halftone, and gray, 16 milliseconds per line for color (speed measured at 600 dpi)
- ScanMaker E3 Plus: 3 milliseconds per line for line art, halftone, and gray, 7 milliseconds per line for color (speed measured at 300 dpi)
- ScanMaker V310 and V300: 2.5 milliseconds per line for line art, halftone, and gray, 6 milliseconds per line for color (speed measured at 300 dpi)

Scanning times vary greatly, depending on image dimensions, resolution, memory capacity, disk access speed, and display time.

**Interface:** Enhanced Parallel Port (EPP)

**Voltage:**
AC 100V to 120V (North America)
AC 100V to 240V (Europe)

**Power Consumption:**
- ScanMaker V600:
  AC 100V to 240V: 1A Max.
  47 to 63 Hz; 30 watts
- ScanMaker E3 Plus:
  AC 100V to 120V: 1A Max.
  AC 100V to 240V: 1A Max.
  47 to 63 Hz; 38 watts
- ScanMaker V310:
  AC 100V to 240V: 0.5A Max.
  47 to 63 Hz; 25 watts
- ScanMaker V300:
  AC 100V to 240V: 0.5A Max.
  47 to 63 Hz; 21 watts

**Dimensions (L x W X H):**
- ScanMaker V600:
  17.3" x 11.5" x 3.2"
- ScanMaker E3 Plus:
  20.2" x 13.5" x 4.6"
- ScanMaker V310 and V300:
  17.3" x 11.7" x 3.54"

**Environment:**
- Operating temperature:
  10° to 40°C (50° to 104°F)
- Storage temperature:
  -10° to 60°C (14° to 140°F)
- Relative humidity:
  20% to 80%
- Storage temperature:
  -10° to 60°C (14° to 140°F)

# ScanMaker 35t Plus Specifications (PC)

**Media:**
Color and black-and-white slides and negatives

**Image Sensor:**
Linear array CCD with daylight fluorescent lamp.

**Scanning Modes:**
30-bit color internal process (24-bit color external process);
10-bit grayscale internal process (8-bit grayscale external process);
1-bit black and white; 12 built-in halftones.

**Scanning Area:**
35 mm (+/- 1.5 mm) x 35 mm
2686 x 2686 pixels

**Maximum Resolution:**
Original:
1950 x 3900 pixels
Interpolated:
3900 x 3900 pixels

**Image Controls**

**Brightness Settings:**
From -18% to +700% in 240 levels; each step at 3% increments.

**Contrast Settings:**
From -42% to +49% in 14 increments; each step at 7%.

**Resolution Settings:**
From 25 % to 100% in 1% per step in gray-scale and color modes (software definable).

**Scanning Speed (35 mm/line):**
2.8 milliseconds to 64 milliseconds per line (depending on the scanner settings)

Scanning times vary greatly, depending on image dimensions, resolution, memory capacity, disk access speed, and display time.

**Interface:**
Adaptec AVA-1502AE SCSI interface card

**Voltage:**
AC 100V to 120V (North America)
AC 200V to 240V (Europe)

**Power Consumption:**
AC 100V to 120V: 1.0 A Max.
AC 200V to 240V: 0.5 A Max.

**Dimensions (L x W x H):**
9.84" x 7" x 5.1"

**Environment:**
Operating temperature:
10° to 40°C ( 50° to 104°F)
Storage temperature:
-10° to 60°C ( 14° to 140°F)
Relative humidity: 20% to 80%

# Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient/relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

*Note: A shielded interface cable with ferrite core installed on scanner connector end must be used with this equipment.*

| Trade Name | Model Name | FCC ID |
|---|---|---|
| ScanMaker E3 | MRS-600E3P | EF9MRS-600E3P |
| ScanMaker V300 | MRS-600V3 | EF9MRS-600V3 |
| ScanMaker V300 | MRS-600V3P | EF9MRS-600V3P |
| ScanMaker V310 | MRS-600V3 | EF9MRS-600V3 |
| ScanMaker V600 | MRS-1200V6 | EF9MRS-1200V6 |
| ScanMaker V600 | MRS-1200V6P | EF9MRS-1200V6P |

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.